

ACADEMIC SESSION : 2023(S)

Discipline : CIVIL ENGG	Semester :4TH	Name of the Teaching Faculty : DEBASIS LENKA
Subject : HIGHWAY ENGINEERING	No. of days / week class allotted	Semester From date: 1 ST : 14/02/2023 to 23/05/2023 Nos. of Weeks per semester : 15
Week	Class Day	Theory/ Practical Topics
1 ST	1 st	Introduction about Highway Engineering
	2 nd	Importance of Highway transportation: importance organizations like Indian roads congress, Ministry of Surface Transport, Central Road Research Institute
	3 rd	Functions of Indian Roads Congress
	4 th	IRC classification of road
	5 th	Organisation of state highway department
2 ND	1 st	Road Geometrics
	2 nd	Glossary of terms used in geometric and their importance
	3 rd	right of way, formation width, road margin
	4 th	road shoulder, carriage way, side slopes, kerbs
	5 th	horizontal and vertical curves
3 RD	1 st	formation level, camber and gradient
	2 nd	Design and average running speed
	3 rd	, stopping and passing sight distance
	4 th	Necessity of curves
	5 th	horizontal and vertical curves
4 TH	1 st	Necessity of curves
	2 nd	horizontal and vertical curves
	3 rd	transition curves
	4 th	transition curves
	5 th	super elevation
5 TH	1 st	super elevation
	2 nd	Methods o f providing super – elevation
	3 rd	Methods o f providing super – elevation
	4 th	Related problems
	5 th	Related problems

6 TH	1 st	Difference types of road materials
	2 nd	soil, aggregates
	3 rd	binders
	4 th	Function of soil as highway Subgrade
	5 th	California Bearing Ratio
7 TH	1 st	methods of finding CBR valued in the laboratory and at site and their significance
	2 nd	Testing aggregates: Abrasion test
	3 rd	impact test, crushing strength test
	4 th	water absorption test & soundness test
	5 th	Road Pavement: Flexible and rigid pavement, their merits and demerits,
8 TH	1 st	typical cross-sections, functions of various components
	2 nd	Sub-grade preparation: Setting out alignment of road, setting out bench marks, control pegs for embankment and cutting, borrow pits, making profile of embankment,
	3 rd	construction of embankment, compaction, stabilization, preparation of subgrade, methods of checking camber, gradient and alignment as per recommendations of IRC
	4 th	equipment used for subgrade preparation
	5 th	Necessity of sub base, stabilized sub base, purpose of stabilization (no designs) Types of stabilization
9 TH	1 st	Mechanical stabilization Lime stabilization●
	2 nd	Cement stabilization
	3 rd	Fly ash stabilization
	4 th	Base Course: Preparation of base course, Brick soling, stone soling and metalling, Water Bound Macadam and wet-mix Macadam
	5 th	Bituminous constructions: Different types
10 TH	1 st	Surface dressing (i) Premix carpet and (ii) Semi dense carpet
	2 nd	Bituminous concrete Grouting, Rigid Pavements: Concept of concrete roads as per IRC specifications
	3 rd	Hill Roads
	4 th	Introduction: Typical cross-sections showing all details of a typical hill road in cut
	5 th	partly in cutting and partly in filling
	1 st	partly in cutting and partly in filling

11 TH	2 nd	Breast Walls, Retaining walls
	3 rd	different types of bends
	4 th	different types of bends
	5 th	Necessity of road drainage work
12 th	1 st	cross drainage works
	2 nd	Surface and sub-surface drains and storm water drains
	3 rd	Location, spacing and typical details of side drains
	4 th	side ditches for surface drainage,
	5 th	intercepting drains, pipe drains in hill roads
13 th	1 st	details of drains in cutting embankment, typical cross sections
	2 nd	Introduction: Typical cross-sections showing all details of a typical hill road in cut
	3 rd	Common types of road failures – their causes and remedies
	4 th	Common types of road failures – their causes and remedies
	5 th	Maintenance of bituminous road such as patch work and resurfacing
14 th	1 st	Maintenance of concrete roads – filling cracks,
	2 nd	repairing joints, maintenance of shoulders (berm)
	3 rd	maintenance of traffic control devices
	4 th	Basic concept of traffic study, Traffic safety and traffic control signal
	5 th	Preliminary ideas of the following plant and equipment; Hot mixing plant
15 th	1 st	Tipper, tractors (wheel and crawler) scraper, bulldozer, dumpers,
	2 nd	shovels, graders, roller dragline
	3 rd	Asphalt mixer and tar boilers
	4 th	Road pavers
	5 th	Modern construction equipments for roads