

IDEAL SCHOOL OF ENGINEERING,RETANG-752054

DISCIPLINE: CIVIL ENGINEERING	SEMESTER: 4TH SEM	NAME OF THE TEACHING FACULTY: ER. MONALISHA MOHAPATRA & ER. NIHAR RANJAN NAYAK
SUBJECT: HIGHWAY ENGINEERING (Th-4)	No of Days/Per week class allotted: 5 Class P/W(75)	Semester From Date: 15/02/2023 To Date: 23/05/2023 No. Of Weeks: 15
WEEK	CLASS DAY	THEORY
1 st	1 st	1.INTRODUCTION: Importance of Highway transportation: importance organizations like Indian roads congress
	2 nd	Ministry of Surface Transport, Central Road Research Institute
	3 rd	Functions of Indian Roads Congress
	4 th	IRC classification of roads
	5 th	Organization of state highway department
2 nd	1 st	2.Road Geometric: Glossary of terms used in geometric and their importance
	2 nd	Glossary of terms used in geometric and their importance
	3 rd	Glossary of terms used in geometric and their importance
	4 th	Right of way, Formation width
	5 th	Road margin, Road shoulder
3 rd	1 st	Carriage way, Side slopes
	2 nd	Kerbs , Formation level
	3 rd	camber and gradient
	4 th	Design and average running speed
	5 th	stopping and passing sight distance
4 th	1 st	Numerical related to stopping sight distance
	2 nd	Numerical related to stopping sight distance
	3 rd	Numerical related to over taking sight distance
	4 th	Numerical related to over taking sight distance
	5 th	Necessity of curves, horizontal and vertical curves including transition curves and super elevation

5 th	1 st	Necessity of curves, horizontal and vertical curves including transition curves and super elevation
	2 nd	Necessity of curves, horizontal and vertical curves including transition curves and super elevation
	3 rd	Methods of providing super – elevation
	4 th	Methods of providing super – elevation
	5 th	Numerical based on super elevation
6 th	1 st	3.Road Materials : Difference types of road materials in use: soil, aggregates
	2 nd	Difference types of road materials in use: binders
	3 rd	Function of soil as highway Sub grade
	4 th	California Bearing Ratio: methods of finding CBR valued in the laboratory and at site and their significance
	5 th	California Bearing Ratio: methods of finding CBR valued in the laboratory and at site and their significance
7 th	1 st	Testing aggregates: Abrasion Test
	2 nd	Testing aggregates: Impact Test
	3 rd	Testing aggregates: Crushing Strength Test
	4 th	Testing aggregates : Water absorption test & Soundness test
	5 th	4.Road Pavements : Road Pavement: Flexible and rigid pavement, their merits and demerits ,Typical cross-sections, Functions of various components ,Flexible
8 th	1 st	Sub-grade preparation: Setting out alignment of road, setting out bench marks, Control pegs for embankment and cutting, borrow pits
	2 nd	Making profile of embankment, construction of embankment, compaction, stabilization
	3 rd	preparation of sub grade, methods of checking camber, gradient and alignment as per recommendations of IRC, equipment used for sub grade preparation
	4 th	Sub base Course: Necessity of sub base, stabilized sub base, purpose of stabilization (no designs)
	5 th	Sub base Course: Necessity of sub base, stabilized sub base, purpose of stabilization (no designs)
	1 st	Types of stabilization : Mechanical stabilization

9 th	2 nd	Types of stabilization : Lime stabilization
	3 rd	Types of stabilization : Cement stabilization, Fly ash stabilization
	4 th	Base Course: Preparation of base course, Brick soling, stone soling and metalling , Water Bound Macadam and wet-mix Macadam, Bituminous constructions: Different types
	5 th	Surfacing: Surface dressing (i) Premix carpet and (ii) Semi dense carpet Bituminous concrete Grouting
10 th	1 st	Surfacing: Surface dressing (i) Premix carpet and (ii) Semi dense carpet Bituminous concrete Grouting
	2 nd	Rigid Pavements: Concept of concrete roads as per IRC specifications
	3 rd	5.Hill Roads: Introduction: Typical cross-sections showing all details of a typical hill road in cut, partly in cutting and partly in filling
	4 th	Introduction: Typical cross-sections showing all details of a typical hill road in cut, partly in cutting and partly in filling
	5 th	Introduction: Typical cross-sections showing all details of a typical hill road in cut, partly in cutting and partly in filling
11 th	1 st	Breast Walls
	2 nd	Retaining walls
	3 rd	Different types of bends
	4 th	Different types of bends
	5 th	6.Road Drainage: Necessity of road drainage work, cross drainage works
12 th	1 st	Surface and sub-surface drains and storm water drains. Location
	2 nd	Spacing and typical details of side drains, side ditches for surface drainage
	3 rd	Intercepting drains, pipe drains in hill roads,
	4 th	Details of drains in cutting embankment
	5 th	Typical cross sections
	1 st	Tutorial class
	2 nd	7.Road Maintenance: Common types of road failures – their causes and remedies

13 th	3 rd	Common types of road failures – their causes and remedies
	4 th	Maintenance of bituminous road such as patch work and resurfacing
	5 th	Maintenance of concrete roads – filling cracks, repairing joints, maintenance of shoulders (berm), maintenance of traffic control devices
14 th	1 st	Maintenance of concrete roads – filling cracks, repairing joints, maintenance of shoulders (berm), maintenance of traffic control devices
	2 nd	Basic concept of traffic study, Traffic safety and traffic control signal
	3 rd	Basic concept of traffic study, Traffic safety and traffic control signal
	4 th	8. Construction equipments: Preliminary ideas of the following plant and equipment: Hot mixing plant
	5 th	Tipper, tractors (wheel and crawler) scraper, bulldozer, dumpers, shovels, graders, roller dragline
15 th	1 st	Tipper, tractors (wheel and crawler) scraper, bulldozer, dumpers, shovels, graders, roller dragline
	2 nd	Asphalt mixer and tar boilers
	3 rd	Road pavers
	4 th	Modern construction equipments for roads.
	5 th	Modern construction equipments for roads.