Discipline: Civil	Semester: 4th	Name of the Teaching Faculty: Prishna pallabika Garnaik
Subjct- Highway Engineering	No. of Days per Week Class Alloted 5	Semester From Date: 16/01/2024 To 26/04/2024 Date: No of Weeks: 15
Week	Class Day	Theory Topics
		1
3rd week of jan	day 1,2,3	**Introduction**
		1.1 Importance of Highway transportation: importance organizations like Indian roads congress, Ministry of Surface Transport, Central Road Research Institute.
		1.2 Functions of Indian Roads Congress
		1.3 IRC classification of roads
		1.4 Organisation of state highway department
4th,5th week of jan,1st,2nd & 3rd week of feb	day 1,2,3 ,day 1,2,day1, day1,2,3, day 1,2,3	2.Road Geometrics
		2.1 Glossary of terms used in geometric and their importance, right of way, formation width, road margin, road shoulder, carriage way, side slopes, kerbs, formation level, camber and gradient
		2.2 Design and average running speed, stopping and passing sight distance
		2.3 Necessity of curves, horizontal and vertical curves including transition curves and super elevation, Methods o f providing super – elevation
4th& 5th week of feb	day1,2,3 ,day1,2,3	3.Road Materials
		3.1 Difference types of road materials in use: soil, aggregates, and binders
		3.2 Function of soil as highway Subgrade
		3.3 California Bearing Ratio: methods of finding CBR valued in the laboratory and at site and their significance
		3.4 Testing aggregates: Abrasion test, impact test, crushing strength test, water absorption test & soundness test
		4.Road Pavements

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2nd,3rd &4th week of march	day1,2,3 ,day1,2,3,day 1,2	**4.1 Road Pavement: Flexible and rigid pavement, their merits and demerits, typical cross-sections, functions of various components**
		Flexible pavements:
		4.2 Sub-grade preparation:
		Setting out alignment of road, setting out bench marks, control pegs for embankment and cutting, borrow pits, making profile of embankment, construction of embankment, compaction, stabilization, preparation of subgrade, methods of checking camber, gradient and alignment as per recommendations of IRC, equipment used for subgrade preparation
		4.3 Sub base Course:
		Necessity of sub base, stabilized sub base, purpose of stabilization (no designs)
		Types of stabilization
		? Mechanical stabilization
		? Lime stabilization
		? Cement stabilization
		? **Fly ash stabilization**
		4.4 Base Course:
		Preparation of base course, Brick soling, stone soling and metalling, Water Bound Macadam and wet-mix Macadam, Bituminous constructions: Different types
		4.5 Surfacing:
		? Surface dressing
		(i) Premix carpet and (ii) Semi dense carpet
		? Bituminous concrete
		? **Grouting**
		4.6 Rigid Pavements:
		Concept of concrete roads as per IRC specifications
		5.Hill Roads:
		5.1 Introduction: Typical cross-sections showing all details of a typical hill road in cut, partly in cutting and partly in filling
		5.2 Breast Walls, Retaining walls, different types of bends

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4th & 5th week of march,1st week of april	day3, day1,2,3 & day 1,2,3	6.Road Drainage: 6.1 Necessity of road drainage work, cross drainage works 6.2 Surface and sub-surface drains and storm water drains. Location, spacing and typical details of side drains, side ditches for surface drainage, intercepting drains, pipe drains in hill roads, details of drains in cutting embankment, typical cross sections.
2nd &3rd week of april	day1,2,3,day1,2	7.Road Maintenance : 7.1 Common types of road failures – their causes and remedies 7.2 Maintenance of bituminous road such as patch work and resurfacing 7.3 Maintenance of concrete roads – filling cracks, repairing joints, maintenance of shoulders (berm), maintenance of traffic control devices 7.4 Basic concept of traffic study, Traffic safety and traffic control signal
3rd&4th week of april	day 3& day1,2,3	8.Construction equipments: Preliminary ideas of the following plant and equipment: 8.1 Hot mixing plant 8.2 Tipper, tractors (wheel and crawler) scraper, bulldozer, dumpers, shovels, graders, roller dragline 8.3 Asphalt mixer and tar boilers 8.4 Road pavers 8.5 Modern construction equipments for roads.

Prof. Incharge
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