LESSON PLAN FOR SESSION SUMMER (2024-25)

PROGRAMME : CIVIL ENGINEERING COURSE NAME : HIGHWAY ENGINEERING COURSE CODE : TH-4 SEMESTER : 4TH PERIODS/WEEK: 5 TOTAL PERIODS :75	NAME OF THE FACULTY: MR. MANAS RANJAN MEHER SESSION : 2024-25 From : 04/02/2025 To :17/05/2025

WEEK	CLASS	TOPICS
FEBRUARY 2nd week	1	**1. Introduction** 1.1 Importance of Highway transportation: importance organizations like Indian roads congress, Ministry of Surface Transport, Central Road Research Institute.
	2	1.2 Functions of Indian Roads Congress.
	3	1.3 IRC classification of roads
	4	1.4 Organisation of state highway department
	5	**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
3rd week	6	2.2 Design and average running speed, stopping and passing sight distance
	7	2.3 Necessity of curves, horizontal and vertical curves including transition curves and super elevation, Methods o f providing super – elevation
	8	**3.Road Materials** 3.1 Difference types of road materials in use: soil, aggregates, and binders
	9	. 3.2 Function of soil as highway Subgrade
	10	3.3 California Bearing Ratio: methods of finding CBR valued in the laboratory and at site and their significance
4th week	11	3.4 Testing aggregates: Abrasion test, impact test, crushing strength test, water absorption test & soundness test
	12	**4.Road Pavements** 4.1 Road Pavement: Flexible and rigid pavement, their merits and demerits, typical cross-sections, functions of various components Flexible pavements:

	13	4.2 Sub-grade preparation: Setting out alignment of road, setting out benc 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
	14	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
	15	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
MARCH 1st week	16	4.5 Surfacing: Surface dressing• (i) Premix carpet and (ii) Semi dense car Bituminous concrete • Grouting•
	17	4.6 Rigid Pavements: Concept of concrete roads as per IRC specifications
	18	**UNIT TEST**
	19	**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
	20	5.2 Breast Walls, Retaining walls, different types of bends
2nd week	21	**6. Road Drainage:** 6.1 Necessity of road drainage work, cross drainage works
	22	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
	23	Doubt Clear class
	24	Internal Exam
	25	Road Maintenance : 7.1 Common types of road failures
3rd Week	26	Road Maintenance : 7.1 Common types of road failures – their causes and remedies maintenance of shoulders (berm), maintenance of traffic control devices
	27	7.2 Maintenance of bituminous road such as patch work and resurfacing
	28	7.3 Maintenance of concrete roads – filling cracks, repairing joints,
	29	7.4 Basic concept of traffic study, Traffic safety and traffic control signal 8 Construction equipments

	30	**UNIT TEST**
4th week	31	**Construction equipments:** Preliminary ideas of the following plant and equipment: 8.1 Hot mixing plant
	32	8.2 Tipper, tractors (wheel and crawler) scraper, bulldozer, dumpers
	33	shovels, graders, roller dragline
	34	8.3 Asphalt mixer and tar boilers
	35	8.4 Road pavers
April 1st week	36	8.5 Modern construction equipments for roads.
	37	Doubt clear class

	38	**UNIT TEST**
	39	Design and average running speed, stopping and passing sight distance
	40	Necessity of curves, horizontal and vertical curves including transition curves and super elevation, Methods o f providing super – elevation
2nd week	41	Difference types of road materials in use: soil, aggregates, and binders
	42	California Bearing Ratio: methods of finding CBR valued in the laboratory and at site and their significance
	43	Testing aggregates: Abrasion test, impact test, crushing strength test, water absorption test & soundness test
	44	Flexible and rigid pavement, their merits and demerits, typical cross-sections, functions of various components Flexible pavements:
	45	Preparation of base course, Brick soling, stone soling and metalling, Water Bound Macadam and wet-mix Macadam, Bituminous constructions: Different types
3rd week	46	Design and average running speed, stopping and passing sight distance
	47	Doubt clear class
	48	Doubt clear class
	49	Design and average running speed, stopping and passing sight distance
	5 0	**UNIT TEST**
4th week	51	Doubt clear class
	52	Doubt clear class

	53	California Bearing Ratio: methods of finding CBR valued in the laboratory and at site and their significance
	54	Testing aggregates: Abrasion test, impact test, crushing strength test, water absorption test & soundness test
	55	Doubt clear class
MAY 1st week	66	Revision Class
	67	Doubt clear class
	68	Revision Class
	69	Revision Class
	70	Revision Class
2nd week	71	Revision Class
	72	Doubt clear class
	73	Revision Class
	74	Revision Class
	75	Revision Class

Concern faculty Signature	**HOD Civil engineering.**	**Academic Coordinator GP Nabarangpur**	**Principal GP Nabarangpur**