

<b>PROGRAMME : CIVIL ENGINEERING</b> <b>COURSE NAME : HIGHWAY ENGINEERING</b> <b>COURSE CODE : TH-4</b> <b>SEMESTER : 4<sup>TH</sup></b>		<b>NAME OF THE FACULTY: UTKALIKA PRADHAN</b> <b>SESSION: SUMMER</b> <b>PERIODS/WEEK: 5</b> <b>TOTAL PERIODS: 75</b>
CLASS	TOPIC	
1	Importance of Highway transportation: importance organizations like Indian roads congress, Ministry of Surface Transport, Central Road Research Institute.	
2	Functions of Indian Roads Congress , Organisation of state highway department	
3	IRC classification of roads	
4	Road geometrics: Cross-sectional elements like carriage way, road margin, road shoulder, formation width	
5	Cross-sectional elements: right of way, camber, side slopes, kerbs, formation level, gradient etc	
6	Different cross sections road	
7	Design and average running speed	
8	Stopping Sight Distance(SSD): Definition, Analysis of SSD	
9	Stopping Sight Distance: Numerical problems	
10	Overtaking Sight Distance(OSD): Definition, Analysis of OSD	
11	Overtaking Sight Distance: Derivations	
12	Overtaking Sight Distance: Numerical problems	
13	Curves: Necessity of curves, Types of curves	
14	Horizontal Curves: Definitions, Examples	
15	Super elevation: Definition, Analysis of super elevation	
16	Numerical problems on analysis of super elevation	
17	Design of super elevation	
18	Numerical problems on super elevation design	
19	Methods of providing super elevation	
20	Vertical curves: Definition, types; Transition curves: Definition, types	
21	Difference types of road materials in use: soil, aggregates, and binders	
22	Function of soil as highway Subgrade ,properties of soil	
23	Aggregates: types, properties	
24	Binders: types, properties	
25	California Bearing Ratio: methods of finding CBR valued in the laboratory and at site and their significance	
26	Testing aggregates: Abrasion test, Impact test,	
27	Crushing strength test, Water absorption test & Soundness test	
28	Road Pavement: Flexible and rigid pavement, their merits and demerits,	
29	Typical cross-sections of pavements	
30	Functions of various components of flexible & rigid pavements	
31	Flexible pavement: Subgrade preparation,	
32	Sub base Course: Necessity of sub base, stabilized sub base, purpose of stabilization	
33	Types of stabilization: Mechanical stabilization ,Lime stabilization	
34	Cement stabilization ,Fly ash stabilization	
35	Base Course: Preparation of base course, Brick soling, stone soling and metalling, Water Bound Macadam and wet-mix Macadam,	
36	Bituminous constructions: Different types	
37	Surfacing: Surface dressing [(i) Premix carpet and (ii) Semi dense carpet ] Bituminous concrete, Grouting	



38	Rigid Pavements: Concept of concrete roads as per IRC specifications
39	Hill Roads: Introduction, Importance
40	Typical cross-sections showing all details of a typical hill road in cut, partly in cutting and partly in filling
41	Breast Walls, Retaining walls
42	Different types of bends
43	Road Drainage: Necessity of road drainage work
44	Cross drainage works
45	Surface drainage: Definition, methods
46	Location, spacing and typical details of side drains, side ditches for surface drainage
47	Sub-surface drainage: Definition, different methods
48	Details of drains in cutting embankment, typical cross section
49	Road Maintenance: Necessity, Different types of road failures
50	Causes & remedies of failures
51	Maintenance of bituminous road such as patch work and resurfacing
52	Maintenance of concrete roads – filling cracks, repairing joints
53	Maintenance of shoulders (berm), Maintenance of traffic control devices
54	Basic concept of traffic study
55	Traffic safety: traffic control devices
56	Traffic signs: Definition & types with diagram
57	Traffic signals: Definition & types
58	Pavement markings: types
59	Construction equipments: Preliminary ideas, Different types of equipments
60	Hot mixing plant,: preliminary ideas
61	Asphalt mixer and tar boilers
62	Preliminary ideas on Tipper, tractors (wheel and crawler) scraper
63	Preliminary ideas on bulldozer, dumpers, shovels, graders, roller dragline
64	Road pavers: types & uses
65	Modern construction equipments for roads.
66	Revision of important topics
67	Revision of important topics
68	Revision of important topics
69	Revision of important topics
70	Revision of important topics
71	Discussion of most probable questions(Short type)
72	Discussion of most probable questions(Short type)
73	Discussion of most probable questions(Long type)
74	Discussion of most probable questions(Long type)
75	Discussion of most probable questions(Long type)

  
Signature of Faculty

  
Signature of HOD