

Govt. Polytechnic, Vaishali

Branch - Civil Engg Sem I

Lecture / Week -  
04 Periods / Week

Sub :- Highway Engineering (1615504)

Lecture plan for syllabus

Effective from - 01.08.2020

Subject teacher - Sanam Rahman Waziri

S.No	Unit	Topic To Be Covered	No. of Lecture	Remark
1	1.	<ul style="list-style-type: none"><li>Importance of road in india.</li><li>Classification of roads according to Nagpur plan (Location and function), and Third road development plan.</li><li>Traffic and Tonnage, classification of urban road.</li></ul>	L1 L2 L3	
2	2.	<ul style="list-style-type: none"><li>Reconnaissance Survey, Preliminary Survey and Location Survey for a road project, Detailed Survey for cross drainage - L-section and C/s Section.</li><li>Fixing the alignment of road, Factor effecting alignment of road.</li><li>Drawing required for road project - key map, Index map, Preliminary Survey plan and detailed location Survey plan, L-Section and C/s Section Cross drainage work.</li></ul>	L4 L5	

S.No.	UNIT	Topic To be Covered	No. of Lecture	Remark
		Land acquisition plan, Survey for availability of construction material, Location plan of quarries.	L6	
3	3	<ul style="list-style-type: none"> <li>• Camber - definition, Purpose, types, IRC - Specification.</li> <li>• Kerb, road margin, road formation, right of way.</li> <li>• Design Speed - IRC specification</li> <li>• Gradient - definition, types, IRC Specification.</li> <li>• Sight distances - definition, types IRC Specification.</li> <li>• Curve - Necessity, types - horizontal, vertical and transition curves.</li> <li>• Widening of roads on curves</li> <li>• Super elevation - definition, formula for calculating Super elevation minimum and maximum values of Super elevation, and methods of providing Super elevation.</li> <li>• Sketching of standard c/c of national highway in embankment and cutting.</li> <li>• Simple problems on geometric design of road.</li> </ul>	L7 L8 L9 L10 L11 L12 L13 L14 L15 L16 L17 L18	

S.No.	UNIT	Topic to be covered.	No. of Lecture	Remarks
4	4	<ul style="list-style-type: none"> <li>• Types of road materials and and Test - Soil, aggregates, bitumen, concrete. Test on Soil Sub grade - C.B.R test, Test on aggregate - Los angles abrasion, Impact and shape test. Test on bitumen - Penetration, Ductility and Softening point test.</li> <li>• Pavement - objective of pavement, Structure of pavement, Function of Pavement Component, Types of pavement.</li> <li>• Construction of earthen road - general terms used - borrow pits, Spoil bank lead &amp; lift, balancing of earthwork Construction procedure.</li> <li>• Soil stabilized roads - Necessity, methods of Soil stabilization, brief detail of Mechanical Soil stabilization</li> <li>• Water bound macadam roads - Materials used, Size and grading of aggregates and Screening Construction procedure including precaution in rolling</li> <li>• Construction bituminous roads. Terms used - bitumen, asphalt, emulsion cutback, tar, Common grades adopted for construction. Types of bituminous Surface - prime coat, tack coat, seal Coat Surface dressing -</li> </ul>	<p>L19 &amp; L20 &amp; L21 &amp; L22 &amp; L23</p> <p>L24 3 L25</p> <p>L26 &amp; L27</p> <p>L28</p> <p>L29</p>	

S.No.	UNIT	Topic TO BE Covered	No of Lecture	Remarks
		<ul style="list-style-type: none"> <li>procedure of construction bituminous penetration Macadam and bitumen / Tar Carpet - procedure of construction.</li> </ul>	L30 8 L31	
5	5.	<ul style="list-style-type: none"> <li>Cement Concrete pavements - Construction procedure and equipments, Construction Joints, Joint filler, Joint Sealers</li> <li>Traffic Volume study</li> <li>Traffic Control device - road Sign, marking, Signal, Traffic island.</li> <li>Road intersection - Intersection of grade and grade separator intersection.</li> <li>Road accident, Building Code IS:1904</li> <li>Definition of active earth pressure and passive earth pressure, structures subjected to earth pressure in the field.</li> </ul>	L32 L33 L34 L35 L36 L37 8 L38	
6	6	<ul style="list-style-type: none"> <li>parts and function of hill road components, Types of curves, Hill road formation.</li> <li>Land Slides - Causes and prevention.</li> <li>Structure - Drainage structure.</li> </ul>	L39 8 L40 L41 L42	

S.No	UNIT	Topic To Be Covered	No. of Lecture	Remarks
7	7	<ul style="list-style-type: none"> <li>• Surface drainage - Side gutter, Catch Water drains, Surface drainage.</li> <li>• Sub - Surface drainage - Longitudinal drains and cross drains.</li> </ul>	L43  L44 3 L45	
8	8	<ul style="list-style-type: none"> <li>• Necessity of maintenance of roads.</li> <li>• Classification of maintenance operation - ordinary, routine and periodic maintenance.</li> <li>• Maintenance of W.B.M bituminous and Cement concrete roads.</li> </ul>	L46  L47  L48	