**USHARAMA COLLEGE OF ENGINEERING&TECHNOLOGY**

**Department Of Civil Engineering**

**Lesson plan**

**Sub: TransportationEngg-I Year: III Sem: I**

|  |  |  |  |
| --- | --- | --- | --- |
| **S.No** | **Topics To Be Covered** | **Cumulative Periods** | **Date** |
| **Unit-I** | | | |
| 1 | **Highway planning and alignment**: Introduction  Highway development in India | 2 | 14-06-2016 |
| 2 | Classification of roads  Road network patterns | 4 | 15-06-2016 |
| 3 | Necessity for highway planning | 6 | 17-06-2016 |
| 4 | Different road development plans, road development vision 2021 | 8 |  |
| 5 | Rural road development plan, vision 2025 | 10 | 20-06-2016 |
| 6 | Planning surveys | 12 | 21-06-2016 |
| 7 | Highway alignment, factors affecting alignment | 14 | 24-06-2016 |
| 8 | Engineering surveys, drawings and reports | 16 | 27-06-2016 |
| 9 | **Assignment on unit-I** | 18 | 28-06-2016 |
| **Unit-II** | | | |
| 10 | **Highway geometric design**: importance of geometric design  Design controls and criteria | 20 | 01-07-2016 |
| 11 | Highway cross section elements | 22 | 04-07-2016 |
| 12 | Sight distance elements-ssd, osd, isd  Design of horizantal alignment | 24 | 05-07-2016 |
| 13 | Design of superelevation and extrawidening | 26 | 08-07-2016 |
| 14 | Design of transition curves | 28 | 11-07-2016 |
| 15 | Design of vertical alignment  Gradients, vertical curves | 30 | 12-07-2016 |
| 16 | **Assignment on unit-II** | 32 | 15-07-2016 |
| **Unit-III** | | | |
| 17 | **Traffic engineering:** basic parameters of traffic –volume, speed and density  Traffic volume studies | 34 | 18-07-2016 |
| 18 | Speed studies  Parking studies | 38 | 22-07-2016 |
| 19 | Road accidents-causes and preventive measures  Condition diagram and collision diagram | 40 | 19-07-2016 |
| 20 | PCU factors, capacity of highways-factors affecting | 44 | 22-07-2016 |
| 21 | Los concepts  Road traffic signs , road markings  Types of intersections; at-grade intersections  Design of plain, flared, rotary and channelized intersections  Design of Traffic signals: Webster method  IRC method | 46 | 25-07-2016 |
| 22 | **Assignment on unit-III** | 48 | 26-07-2016 |
| 23 | **Revision and preparation for I mid** | 54 | 01-08-2016 to 05-08-2016 |
| **Unit-IV** | | | |
| 24 | **Highway materials**: subgrade soil, classification, group index | 56 | 16-08-2015 |
| 25 | Subgrade soil strength, CBR | 58 | 19-08-2015 |
| 26 | Modulas of subgrade reaction  Stone aggregates: desirable properties | 60 | 22-08-2016 |
| 27 | Tests for road aggregates | 62 | 23-08-2016 |
| 28 | Bituminous materials: types, desirable properties  Tests on bitumen | 64 | 26-08-2016 |
| 29 | Bituminous paving mixes: requirements  Marshall ethod of mix design | 66 | 29-08-2016 |
| 30 | **Assignment on unit-IV** | 68 | 30-08-2016 |
| **Unit-V** | | | |
| 31 | **Design of pavements**: types of pavements | 70 | 02-09-2016 |
| 32 | Functions and requirements of different types of pavements, design factors | 72 | 06-09-2016 |
| 33 | **Flexible pavements**: design factors, flexible pavement design methods | 74 | 09-09-2016 |
| 34 | CBR method, IRC method | 76 | 09-09-2016 |
| 35 | Burmister method, mechanistic method  IRCmethod for low volume flexible pavements | 78 | 13-09-2016 |
| 36 | **Rigid pavements:** design considerations | 80 | 16-09-2016 |
| 37 | Wheel load stresses, temperature stresses, frictional stresses , Combination of stresses | 82 | 19-09-2016 |
| 38 | Design of slabs, Design of joints, IRC method  Rigid pavements for low volume roads | 84 | 20-09-2016 |
| 39 | Continuously reinforced cement concrete pavements  Roller compacted concrete pavements | 86 | 23-09-2016 |
| 40 | **Assignment on unit-V** | 88 | 26-09-2016 |
| **Unit-VI** | | | |
| 41 | **Highway construction and maintenance** : introduction, types of highway construction, earthwork | 90 | 27-09-2016 |
| 42 | Construction of earth roads, gravel roads, water bound macadam roads  Bituminous pavements and construction of cement concrete pavements | 92 | 28-09-2016 |
| 43 | Pavement failures, maintenance of highways  Pavement evaluation, strengthing of existing pavements | 94 | 30-09-2016 |
| 44 | **Assignment on unit-VI** | 96 | 30-09-2016 |
| 45 | **Revision and preparation for II mid** | 102 | 03-10-2016 to  07-10-2016 |

**Text books:**

1. ‘Highway engineering’ by Khanna S.K., Justo C.E.G and veeraragavan A, NEM Chand Bros, Roorkee.
2. ‘Traffic engineering and transportation planning’ by kadiyali L.R, Khanna Publishers, New Delhi.
3. ‘Highway engineering’ by Srinivas kumar R, universities press, Hyderabad.

**References:**

1. ‘Transportation engineering and planning’ by papacoastas C.S. and D Prevedouros, prentice Hall of India pvt. Ltd; New Delhi
2. ‘Principles of highway engineering’ by kadiyali LR, Khanna publishers, New Delhi.
3. ‘Transportation engineering-a n introduction’ by jotin Khisty c prentice hall, Englewood cliffs ,New Jersey.
4. ‘Highway engineering’ by paul H. wright and Karen K Dixon, wiley student edition , Wiley India(p) Ltd., New Delhi.
5. ‘Principles of transportation engineering’ by partha chakraborthy and Animesh das, PHI learning private limited , New Delhi.
6. ‘Practice and design of highway engineering’ by Sharma Sk, principles, s.Chand & company private limited, New Delhi.

**FACULTY HOD**