BHUBANANANDA ODISHA SCHOOL OF ENGINEERING, CUTTACK

DEPARTMENT OF CIVIL ENGINEERING



LESSON PLAN

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| SUBJECT: HIGHWAY ENGG. (TH 4) | ACCADEMIC SESSION: 2021-22 |
| FACULTY: SRI KANITPALAKIA | SEMESTER: 4TH |
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| H O D (Civil Engg.) |

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| Discipline:  **Civil Engineering** | Semester:  **4th** | | Name of the teaching faculty:  **Sri KanitPalakia** |
| Subject:  **Highway Engg.** | No of days per week class allotted: **05 periods/week**  **(Mon, Tue, Thu, Fri and sat-1 period each)** | | Semester : From date: 10-03-2022 to date : 10-06-2022  No of weeks: 14 weeks |
| Week | Class Day | No of period available | Theory/Practical topic |
| 1st | 10-03-2022 | 1 | 1.1 Importance of Highway transportation |
| 11-03-2022 | 1 | Importance organizations like Indian roads congress, Ministry of Surface Transport, Central Road Research Institute. |
| 12-03-2022 | 1 | 1.2 Functions of Indian Roads Congress |
| 2nd | 14-03-2022 | 1 | 1.3 IRC classification of roads  1.4 Organisation of state highway department |
| 15-03-2022 | 1 | 2.1 Glossary of terms used in geometric and their importance, |
| 17-03-2022 | 1 | Right of way, formation width, road margin, road shoulder |
| 3rd | 21-03-2022 | 1 | Carriage way, side slopes, kerbs, formation level |
| 22-03-2022 | 1 | Camber and gradient |
| 24-03-2022 | 1 | 2.2 Design and average running speed |
| 25-03-2022 | 1 | Stopping sight distance |
| 26-03-2022 | 1 | Passing sight distance |
| 4th | 28-03-2022 | 1 | Numericals on Stopping sight distance |
| 29-03-2022 | 1 | Numericals on Passing sight distance |
| 31-03-2022 | 1 | Monthly class test |
| 02-04-2022 | 1 | 2.3 Necessity of curves, horizontal and vertical curves |
| 5th | 04-04-2022 | 1 | Transition curves |
| 05-04-2022 | 1 | Super-elevation |
| 07-04-2022 | 1 | Methods of providing super – elevation |
| 08-04-2022 | 1 | Numericals on transition curves |
| 09-04-2022 | 1 | Numericals on superelevation |
| 6th | 11-04-2022 | 1 | Discuss previous year questions |
| 12-04-2022 | 1 | 3.1 Difference types of road materials in use Soil, aggregates, and binders |
| 16-04-2022 | 1 | 3.2 Function of soil as highway Subgrade |
| 7th | 18-04-2022 | 1 | California Bearing Ratio |
| 19-04-2022 | 1 | Methods of finding CBR valued in the laboratory and their significance |
| 21-04-2022 | 1 | methods of finding CBR valued at site and their significance |
| 22-04-2022 | 1 | 3.4 Testing aggregates: Abrasion test, impact test |
| 23-04-2022 | 1 | Crushing strength test, water absorption test & soundness test |
| 8th | 25-04-2022 | 1 | Discuss previous year questions |
| 26-04-2022 | 1 | 4.1 Road Pavement: Flexible and rigid pavement, their merits and demerits |
| 28-04-2022 | 1 | Typical cross-sections, functions of various components |
| 29-04-2022 | 1 | Flexible pavements:  4.2 Sub-grade preparation:  Setting out alignment of road, setting out bench marks, control pegs for embankment and cutting, borrow pits |
| 30-04-2022 | 1 | Monthly class test |
| 9th | 02-05-2022 | 1 | Making profile of embankment, construction of embankment, compaction, stabilization, preparation of subgrade |
| 05-05-2022 | 1 | Methods of checking camber, gradient and alignment as per recommendations of IRC, equipment used for subgrade preparation |
| 06-05-2022 | 1 | 4.3 Sub base Course:  Necessity of sub base, stabilized sub base, purpose of stabilization  Types of stabilization   Mechanical stabilization, Lime stabilization, Cement stabilization, Fly ash stabilization |
| 07-05-2022 | 1 | 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 |
| 10th | 09-05-2022 | 1 | Internal Examination |
| 10-05-2022 | 1 | Internal Examination |
| 12-05-2022 | 1 | 4.5 Surfacing:  Surface dressing  (i) Premix carpet and (ii) Semi dense carpet, Bituminous concrete, Grouting |
| 13-05-2022 | 1 | 4.6 Rigid Pavements:  Concept of concrete roads as per IRC specifications |
| 14-05-2022 | 1 | Discuss previous year questions |
| 11th | 17-05-2022 | 1 | 5.1 Introduction: Typical cross-sections showing all details of a typical hill road in cut |
| 19-05-2022 | 1 | Typical cross-sections showing all details of a typical hill road partly in cutting and partly in filling |
| 20-05-2022 | 1 | 5.2 Breast Walls, Retaining walls |
| 21-05-2022 | 1 | Different types of bends |
| 12th | 23-05-2022 | 1 | Discuss previous year questions |
| 24-05-2022 | 1 | 6.1 Necessity of road drainage work, cross drainage works |
| 26-05-2022 | 1 | 6.2 Surface and sub-surface drains and storm water drains |
| 27-05-2022 | 1 | Location, spacing and typical details of side drains, side ditches for surface drainage, intercepting drains, pipe drains in hill roads |
| 28-05-2022 | 1 | Details of drains in cutting embankment, typical cross sections. |
| 13th | 31-05-2022 | 1 | Monthly class test |
| 02-06-2022 | 1 | 7.1 Common types of road failures – their causes and remedies |
| 03-06-2022 | 1 | 7.2 Maintenance of bituminous road such as patch work and resurfacing |
| 04-06-2022 | 1 | 7.3 Maintenance of concrete roads – filling cracks, repairing joints, maintenance of shoulders (berm), maintenance of traffic control devices |
| 14th | 06-06-2022 | 1 | 7.4 Basic concept of traffic study, Traffic safety and traffic control signal |
| 07-06-2022 | 1 | 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 |
| 09-06-2022 | 1 | 8.3 Asphalt mixer and tar boilers  8.4 Road pavers  8.5 Modern construction equipments for roads. |
| 10-06-2022 | 1 | Discuss previous year questions |