# PARALA MAHARAJA ENGINEERING COLLEGE, BERHAMPUR

## LESSON PLAN

**Subject(PCI4I102)- Highway & Traffic Engineering (3-0-1)** **Semester- 4th sem**

**Branch/Course- Civil engineering/B.Tech**

| Lecture No | Module | Topics to be delivered | Remarks/Sign of Faculty Member |
|---|---|---|---|
| 1 | I | Modes of transportation, importance of highway transportation, history of road construction. Principle of highway planning, road development plans. | |
| 2 | I | Highway alignments requirements. engineering surveys for highway location. | |
| 3 | I | Geometric design- Design controls, highway cross section elements. Cross slope or camber | |
| 4 | I | Road width, road margins, typical cross sections of roads, design speed | |
| 5 | I | Sight distance | |
| 6 | I | Design of horizontal alignments | |
| 7 | I | Design of vertical alignments | |
| 8 | I | Horizontal curves, Vertical curves | |
| 9 | II | Highway Materials:- Properties of subgrade , sub-base , base course and surface course materials | |
| 10 | II | Test on subgrade soil, aggregates and bituminous materials. | |
| 11 | II | Traffic Engineering:- definition, fundamentals of traffic flow | |
| 12 | II | Traffic volume studies | |
| 13 | II | Speed studies | |
| 14 | II | Traffic management, prevention of road accidents | |
| 15 | II | Elements of transport planning | |
| 16 | II | Highway drainage | |
| 17 | III | Design of Highway Pavements | |
| 18 | III | Flexible pavements and their design | |
| 19 | III | equivalent single wheel load factor, rigid pavements | |
| 20 | III | review of old methods, CBR method, IRC:37-2012, | |
| 21 | III | stress in rigid pavement, IRC design method (IRC:58-2011). | |
| 22 | IV | Highway Construction: Construction of various layers, earthwork, WBM, GSB, WMM, various types of bituminous layers, | |
| 23 | IV | joints in rigid pavements, Hot Mix Plants, Construction of Rigid Pavements | |
| 24 | IV | Highway Maintenance: Various type of failures of flexible pavements. | |
| 25 | IV | Various type of failures of rigid pavements. | |

| Course Outcome (CO) | Descriptions (At the end of the semester students will be able to) |
|---|---|
| CO1 | Develop concept on cross section elements, sight distances, horizontal and vertical alignments of Highway. |
| CO2 | Examine properties of Highway materials. |
| CO3 | Design flexible and rigid pavements according to IRC guidelines. |
| CO4 | Summarize knowledge on traffic studies, traffic rules and regulations. |
| CO5 | Define various types of failures of pavements and their preventive measures. |