**20CE31E3**–**TRAFFIC ENGINEERING AND MANAGEMENT**

**(Civil Engineering)**

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| **Course Category**  | Professional Elective | **Credits** | 3 |
| **Course Type** | Theory | **Lecture - Tutorial - Practical** | 3 - 0 - 0 |
| **Prerequisite** | TransportationEngineering | **Sessional Evaluation**  | 40 |
| **Semester End Exam Evaluation** | 60 |
| **Total Marks** | 100 |

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| **Course Outcomes** | CO1 | Apply methods of traffic forecast in transport planning. |
| CO2 | Understand the design of rotary intersection. |
| CO3 | Understand the different types environmental degradation due to vehicular traffic |
| CO4 | Apply the road safety concepts in different stages of highway planning.  |
| CO5 | Understand different regulations and methods for effective traffic management. |
| CO6 | Understand different types of road markings and concepts of street furniture  |
| **Course****Content** | **UNIT – I****TRAFFIC FORECAST:** Function of traffic engineering – Need for traffic forecast– Limitations of traffic forecasting – Types of traffic – Different methods of traffic forecasting – Forecast based on past trends cud extrapolation – Forecasts and mathematical models – Period of forecasting.**UNIT – II****ROTARY INTERSECTIONS:** Design hourly volume, passenger car unit (PCU) – Factors affecting PCU values – Highway capacity – Factors affecting capacity – Level of service and types – Rotary intersection – Advantages and disadvantages. Guidelines for selecting a rotary type of intersection – Rotary design elements – Capacity of rotary intersection problems.**UNIT –III****TRAFFIC AND ENVIRONMENT:** Effects of traffic on environment, noise pollution, air pollution, vibration, visual intrusion and degrading the aesthetics.**UNIT –IV****ACCIDENT STUDIES:** Causes of road accidents – Highway design and road safety – Road safety in various stages of highway system – Road safety incorporated at planning stage – Collection of accident data – Standard accident representing forms.**UNIT – V****TRAFFIC MANAGEMENT**: Traffic management measures – Restrictions of turning movements – One way streets – Tidal flow operation– Closing side streets– Exclusive bus lanes.**TRAFFIC REGULATIONS:** Basic principles of regulation, regulation of speed, vehicles, driver, mixed traffic, parking regulations and enforcement of regulations.**UNIT – VI****ROAD MARKINGS:** Introduction – Classification of road markings – Line markings – Centre line, transverse markings, arrow markings, facility markings, directional markings, objectmarkings – Road studs.**TRAFFIC CONTROL AND SAFETY:** Traffic control aids and street furniture – Speed breakers – Rumble strips – Guard rails.**TRAFFIC FLOW:** Traffic streamparameters– Space headway and time head way – Line occupancy – Density – Lane capacity– Types of traffic capacity. |

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| **Textbooks****and****References** | **TEXTBOOKS:**1. Khanna, S.K. Justo C.E.G &Veeraraghavulu, “*Highway Engineerin*g” Nemchand&bros,10th edition, 2018.
2. C.Venkatramaiah “*Transportation Engineering Vol I*” Universities Press (India) Private Ltd, 1st edition, 2016.
3. Dr.L.R.Kadiyali, ”*Traffic engineering and Transport planning*” Khanna publishers, 9th edition, 2017.

**REFERENCE BOOKS:**1. Dr. L.R.Kadiyali, “*Principles and Practice of Highway Engineering*” Khanna publishers, 7th edition, 2019.
2. Vazirani and Chandola *“Transportation Engineering*, *Vol. I*” Khanna publishers, 5th edition, 1998.
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**CO-PO Mapping:** 3-High Mapping, 2-Moderate Mapping, 1-Low Mapping, - -Not Mapping

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|   | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO6** | **PO7** | **PO8** | **PO9** | **PO10** | **PO11** | **PO12** | **PSO1** | **PSO2** | **PSO3** |
| **CO1** | 1 | - | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 1 | 2 |
| **CO2** | 1 | - | 2 | 2 | 2 | - | - | 1 | 1 | 3 | 1 | 1 | 1 | - | 2 |
| **CO3** | 2 | - | 1 | 2 | 1 | 2 | - | 1 | 2 | 3 | 1 | 1 | - | - | 1 |
| **CO4** | 2 | 2 | 3 | 2 | 2 | 1 | 1 | 1 | 2 | 3 | 1 | 1 | 2 | 1 | 1 |
| **CO5** | 3 | - | - | 1 | 2 | 1 | - | 1 | 2 | 2 | 2 | 1 | - | - | - |
| **CO6** | 1 | - | 1 | 2 | 2 | 1 | 1 | 3 | 3 | 2 | 1 | 1 | - | 1 | - |