**19CE42E3**–**TRAFFIC ENGINEERING AND MANAGEMENT**

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

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| **Course Objectives** | 1. To present the need and methods of traffic forecast. 2. To analyze the basic concepts and design of rotary intersection. 3. To outline the relationship between traffic and environment. 4. To demonstrate the road safety concepts in transportation planning. 5. To elaborate traffic management methods. 6. To conclude different road markings and traffic control aids. | |
| **Course Outcomes** | CO1 | Apply methods of traffic forecast in transport planning. |
| CO2 | Calculate capacity of rotary intersection. |
| CO3 | Evaluate extent of environmental degradation due to vehicular traffic |
| CO4 | Apply the road safety concepts in different stages of highway planning. |
| CO5 | Summarize different regulations and methods for effective traffic management. |
| CO6 | Illustrate 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 FLOW:** Traffic stream parameters– Space headway and time head way – Line occupancy – Density – Lane capacity– Types of traffic capacity.  **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, object markings – Road studs.  **MISCELLANEOUS:** Traffic control aids and street furniture – Speed breakers – Rumble strips – Guard rails. | |
| **Textbooks**  **and**  **References** | **TEXTBOOKS:**   1. S.K. Khanna, C.E.G.Justo &Veeraraghavulu, “*Highway Engineerin*g”, Nem chand and Bros, 10th edition, 2018. 2. Dr. L.R.Kadiyali, “*Principles and Practice of Highway Engineering”*, Khanna publishers, 7th edition, 2019. 3. C.Venkatramaiah, “*Transportation Engineering”,* Vol-I Universities Press (India) Private Ltd, 1st edition, 2016.   **REFERENCE BOOKS:**   1. *Guidelines for the Design of flexible pavements*, IRC:37-2001. 2. *Guidelines for the Design of rigid pavements for highways*, IRC:58-1988. 3. Dr.L. R. Kadiyali, *Traffic engineering and Transport planning,* Khann publishers, 9th edition, 2017. | |

**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** |
| **CO1** | - | 2 | - | - | - | - | - | - | - | - | - | - |
| **CO2** | 3 | 3 | 2 | - | - | - | - | - | - | - | 2 | 2 |
| **CO3** | 2 | 1 | - | - | - | - | - | - | - | - | - | - |
| **CO4** | - | - | - | 1 | - | - | - | - | - | - | - | - |
| **CO5** | - | - | - | - | - | 2 | - | - | - | - | - | 2 |
| **CO6** | - | - | 2 | - | - | - | - | - | - | - | - | - |