**20CE32E2 - URBAN TRANSPORTATION PLANNING**

**(Civil Engineering)**

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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 Outcomes** | CO1 | Understand the basic concepts of transportation planning along with method of traffic forecast analysis. |
| CO2 | Able to conduct transportation surveys which are essential in urban transportation planning. |
| CO3 | Apply the basic concepts, factors affecting Trip generation and also use multiple linear regression analysis in Trip generation calculations. |
| CO4 | Understand different methods of trip distribution.  |
| CO5 | Understand the concept of model spilt analysis. |
| CO6 | Perform evaluation of transportation plans and also prepare transportation plan for a small town. |
| **Course****Content** | **UNIT – I****TRANSPORT PLANNING PROCESS:** Scope of the Subject – Interdependence of the land use and traffic – Systems approach to transport planning –stages in transport planning – Survey and analysis of existing conditions – Forecast analysis of future conditions and plan synthesis – Evaluation – Programme adoption and implementation – Continuing study – Citizen participation – Difficulties in the transport planning process. **UNIT – II****TRANSPORTATION SURVEY:** Introduction – Definition of the study area – Zoning – Type of Surveys – Home interview surveys – Commercial vehicles surveys – Taxi surveys –Roadside interview surveys –Postcard questionnaire – Registration number plate surveys – tags on vehicles – Public transport surveys – Inventory of transport facilities – Inventory of land use and economic activities**UNIT – III****TRIP GENERATION:** Introduction and definitions – Trip purpose – Factors governing Trip generation and Trip attraction rates – Multiple linear regression analysis – Category analysis – Trip based and activity based approach.**UNIT – IV****TRIP DISTRIBUTION:**Introduction, Methods of trip distribution – Growth factor methods - Uniform (Constant) factor method – Average factor method – Synthetic methods – Gravity model.**UNIT – V****TRAFFIC ASSIGNMENT**: Purpose of traffic assignment – General principles – assignment techniques – All-or-nothing assignment (free assignment or desire assignment) – Multiple route assignment – Capacity restraint assignment – Diversion curves.**MODAL SPLIT**:Introduction – Factors affecting model split –Modal split in the transport planning process.**UNIT – VI****EVALUATION**: Need for Evaluation – Several plans to be formulated – Testing – Considerations in evaluation – Economic evaluation. **VEHICLE OPERATING COST**S: Theory of Vehicle operating cost (VOC) – Component, factors affecting VOC.**TRANSPORT PLANNING FOR SMALL AND MEDIUM SIZED CITIES**: Introduction – Difficulties in transport planning for small and medium cities – Quick response techniques. |
| **Textbooks****and****References** | **TEXTBOOKS:**1. Khanna, S.K. Justo C.E.G & Veeraraghavulu, “*Highway Engineering*” Nem chand&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. Dr.LR Kadiyali ”*Traffic engineering and Transport planning*” Khanna publishers, 9th edition, 2017.
2. Vazirani and Chandola “*Transportation Engineering”* Vol. I” Khanna publishers, 5th edition, 1998.
3. A. K. Jain, *“ Urban Transport Planning and Management”,* APH Publishing corporation, 2009.
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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 | - | - | 2 |
| **CO2** | 1 | - | 2 | 2 | 2 | - | - | 1 | 1 | 3 | 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 |
| **CO5** | 3 | - | - | 1 | 2 | 1 | - | 1 | 2 | 2 | 2 | 1 | - | - | 2 |
| **CO6** | 1 | - | 1 | 2 | 2 | 1 | 1 | 3 | 3 | 2 | 1 | 1 | - | 1 | 1 |