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|  | | | **National Institute of Technology Meghalaya**  An Institute of National Importance | | | | | | | | | | **CURRICULUM** | | |
| Programme | | | **Master of Technology** | | | | | Year of Regulation | | | | | **2018-19** | | |
| Department | | | **Civil Engineering** | | | | | Semester | | | | | **I** | | |
| Course Code | | Course Name | | Pre-requisite | | Credit Structure | | | | Marks Distribution | | | | | |
| L | T | P | C | INT | | MID | END | | Total |
| **CE 517** | | **Traffic Engineering** | | **NIL** | | **3** | **0** | **0** | **3** | **50** | | **50** | **100** | | **200** |
| Course Objectives | | 1. To understand the fundamental of traffic engineering 2. To learn about traffic movement in signalized and unsignalized intersection. 3. To learn about various traffic model and their applications. 4. To learn about intelligent transportation system 5. To learn about latest trend and innovation in traffic engineering | | | Course Outcomes | | CO1 | To visualize the fundamentals of traffic engineering in practical scenarios. | | | | | | | |
| CO2 | To understand vehicle behaviour under signalized and unsignalized traffic | | | | | | | |
| CO3 | To know the steps to modify the pre existing traffic management system | | | | | | | |
| CO4 | Aware of various traffic flow models and their implementation. | | | | | | | |
| CO5 | Aware about latest trend and innovation in traffic management system | | | | | | | |
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| SYLLABUS | | | | | | | | | | | | | | | |
| No. | Content | | | | | | | | | | Hours | | | COs | |
| I | **Fundamental of traffic engineering:**  Component of road traffic- Vehicle, driver and road, relationship between speed, flow and density. Sampling of traffic studies, Sample size adequacy, analysis and interpretation of fundamental traffic parameters, Macroscopic and Microscopic approach | | | | | | | | | | **6** | | | CO1 | |
| II | **Design of Traffic engineering facilities**  Conflict diagram. Concept of left turn and right turn equivalency, Signalized and unsignalized Intersections, redesign of existing signal, critical movement analysis of signalized intersection, pedestrian signal requirement. | | | | | | | | | | **9** | | | CO2, CO3 | |
| III | **Traffic flow models**  Simulation methodologies and model design, Lighthill and whitham’s Theory, Greenberg’s extension of the law of continuity, Deterministic and stochastic models of stream flows; Car following models; Stability and diffusion phenomena in traffic; Coordination and optimization of network of signalized intersections; Pedestrian flow problems; Simulation languages; Study of large scale simulation models. | | | | | | | | | | **9** | | | CO4 | |
| IV | **Intelligent Transportation System:**  Intelligent transportation system (ITS) standards, organization and source of information. Traffic control in an ITS environment, Latest development in ITS technology, Emerging issues | | | | | | | | | | **8** | | | CO5 | |
| V | **Traffic Impact Analysis**  Tool, method and metrics, case studies | | | | | | | | | | **4** | | | CO5 | |
| Total Hours | | | | | | | | | | | **36** | | |  | |
| **Essential Readings** | | | | | | | | | | | | | | | |
| 1. Roess, Roger P., Prassas, Elena S.,McShane, William R., Traffic Engineering , 4th edition, Pearson publication | | | | | | | | | | | | | | | |
| 1. Pignataro, L., Traffic Engineering – Theory & Practice, John Wiley, 1973. | | | | | | | | | | | | | | | |
| 1. Kadiyali, L.R., Traffic Engineering and Transport Planning, Khanna publishers, 2007. | | | | | | | | | | | | | | | |
| 1. McShane W R & Roess R P, Traffic Engineering, Prentice-Hall, NJ, 2010 | | | | | | | | | | | | | | | |
| **Supplementary Readings** | | | | | | | | | | | | | | | |
| 1. C. J. Khisty and B. K. Lall, Transportation Engineering: An Introduction, Prentice- Hall India, 2003. | | | | | | | | | | | | | | | |
| 1. Salter, R J., Highway Traffic Analysis and Design, ELBS, 1996. | | | | | | | | | | | | | | | |
| 1. IRC-SP41: Guidelines for the Design of At-Grade Intersections in Rural & Urban Areas | | | | | | | | | | | | | | | |
| 1. Matson, Smith and Hurd, Traffic Engineering, Mc-Graw Hill Book Co, 1955. | | | | | | | | | | | | | | | |