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|  | | | | **National Institute of Technology Meghalaya**  An Institute of National Importance | | | | | | | | | | | | | | | | | | | | **CURRICULUM** | | | | |
| Programme | | | | **Bachelor of Technology in Civil Engineering** | | | | | | | | | | | | | Year of Regulation | | | | | | | **2020** | | | | |
| Department | | | | **Civil Engineering** | | | | | | | | | | | | | Semester | | | | | | | **V** | | | | |
| Course Code | | Course Name | | | | | | | | **Pre-Requisite** | | | | Credit Structure | | | | | | Marks Distribution | | | | | | | | |
| **CE353** | | **Transportation Engineering Lab-I** | | | | | | | | **Nil** | | | | L | | T | | P | C | Continuous Assessment | | | | | | | Total | |
| **0** | | **1** | | **2** | **2** | **01 Experiment** | | | | **10** | | | **100** | |
| Course Objectives | | To carry out tests on construction materials for their suitability to be used in pavement constructions. | | | | | | | | | | Course Outcomes | | | | CO1 | | To monitor and maintain pavement structures. | | | | | | | | | | |
| To identify and classify the pavement materials into different groups according to their characteristics. | | | | | | | | | | CO2 | | Students will develop insight into the characterization aspects of various pavement materials for use in highways, airports and railways. | | | | | | | | | | |
| To make the students understand the various testing protocols for pavement materials as per BIS standards. | | | | | | | | | | CO3 | | Students will be able to develop Job mix formula and carry out mix design for various types of bituminous mixes. | | | | | | | | | | |
|  | | | | | | | | | | CO4 | | Students will be able to prepare the testing reports related to highway engineering works. | | | | | | | | | | |
|  | | | | | | | | | | CO5 | | Students will develop the understanding of various BIS, IRC and ISO standards and to design the highways in conformity with these codes. | | | | | | | | | | |
| No. | COs | | Mapping with Program Outcomes (POs) | | | | | | | | | | | | | | | | | | | | Mapping with PSOs | | | | | |
| PO1 | | PO2 | PO3 | PO4 | PO5 | PO6 | | PO7 | | PO8 | | PO9 | | | PO10 | PO11 | | PO12 | | PSO1 | | PSO2 | | | PSO3 |
| 1 | CO1 | | **3** | | **3** | **3** | **0** | **0** | **0** | | **0** | | **0** | | **0** | | | **0** | **0** | | **2** | | **3** | | **3** | | | **1** |
| 2 | CO2 | | **3** | | **3** | **3** | **0** | **0** | **1** | | **1** | | **0** | | **0** | | | **0** | **0** | | **1** | | **3** | | **3** | | | **1** |
| 3 | CO3 | | **3** | | **2** | **1** | **0** | **0** | **0** | | **0** | | **0** | | **0** | | | **0** | **0** | | **0** | | **1** | | **3** | | | **2** |
| 4 | CO4 | | **3** | | **3** | **2** | **0** | **0** | **0** | | **2** | | **0** | | **0** | | | **0** | **0** | | **0** | | **1** | | **3** | | | **1** |
| 5 | CO5 | | **0** | | **0** | **1** | **0** | **1** | **0** | | **2** | | **0** | | **0** | | | **0** | **0** | | **1** | | **1** | | **2** | | | **3** |
| SYLLABUS | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | Content | | | | | | | | | | | | | | | | | | | | | Hours | | | | COs | | |
| 1 | Introduction | | | | | | | | | | | | | | | | | | | | | 02 | | | | **CO1 CO2 CO3 CO4 CO5** | | |
| 2 | Aggregate Impact value test | | | | | | | | | | | | | | | | | | | | | 02 | | | |
| 3 | Los Angeles Abrasion value Test | | | | | | | | | | | | | | | | | | | | | 02 | | | |
| 4 | Aggregate crushing value test | | | | | | | | | | | | | | | | | | | | | 02 | | | |
| 5 | Elongation and Flakiness index test | | | | | | | | | | | | | | | | | | | | | 02 | | | |
| 6 | Bitumen Penetration test | | | | | | | | | | | | | | | | | | | | | 02 | | | |
| 7 | Ductility test of bitumen | | | | | | | | | | | | | | | | | | | | | 02 | | | |
| 8 | Softening point test | | | | | | | | | | | | | | | | | | | | | 02 | | | |
| 9 | Flash and fire point test | | | | | | | | | | | | | | | | | | | | | 02 | | | |
| 10 | Aggregate Impact value test | | | | | | | | | | | | | | | | | | | | | 02 | | | |
| 11 | Carry out Bituminous mix design as per Marshall method of Mix design. | | | | | | | | | | | | | | | | | | | | | 02 | | | |
| 12 | Revision and doubt clearing sessions | | | | | | | | | | | | | | | | | | | | | 02 | | | |  | | |
| Total Hours | | | | | | | | | | | | | | | | | | | | | | **24** | | | |  | | |
| **Essential Readings** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Venkatappa, G. R, Ramachandra, K. R, Kaushik, P, Bhavanna, D.V. R, “Highway Material Testings and Quality Control” | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Khanna, S.K. and Justo, “Highway Engineering”, C.E.G.,Nemchand Bros | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Supplementary Readings** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. MORT& H, “Specifications of Road and Bridge Works”,. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Harold, N. A., “Highway Materials, Soil and Concrete”, Prentice Hall | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | | | | | | | | | | | | | | | | | | | | | | | | | | | | |