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|  | | | **National Institute of Technology Meghalaya**  An Institute of National Importance | | | | | | | | | | **CURRICULUM** | | |
| Programme | | | **Master of Technology (Structural Engineering)** | | | | | Year of Regulation | | | | | **2018** | | |
| Department | | | **Civil Engineering** | | | | | Semester | | | | | **I** | | |
| Course Code | | Course Name | | Pre-requisite | | Credit Structure | | | | Marks Distribution | | | | | |
| L | T | P | C | INT | | MID | END | | Total |
| **CE 523** | | **Advance Concrete Technology lab** | | **NIL** | | **0** | **0** | **2** | **1** |  | | | **100** | | **100** |
| Course Objectives | | To get the knowledge of concrete mix design as per IS and ACI code. | | | Course Outcomes | | CO1 | The student will be able to know concrete design mix for particular grade of concrete according to IS code and ACI code | | | | | | | |
| Going through the course one would develop knowledge on strength and durability test of concrete of different grade of concrete | | |
| CO2 | Student will be able to use these solutions to guide a durability test of concrete and non-destructive test on concrete using Rebound hammer and USPV method | | | | | | | |
| The student will be able to do the non-destructive testing**.** | | |
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| SYLLABUS | | | | | | | | | | | | | | | |
| No. | Content | | | | | | | | | | Hours | | | COs | |
| I | Design of concrete mix by IS code and ACI methods. | | | | | | | | | | 1 | | | CO1 | |
| II | Design of Special Concrete likes fibers, SCC, HPC | | | | | | | | | | 1 | | | CO2 | |
| III | Strength tests on concrete (compression, tension and bending – modulus of elasticity) | | | | | | | | | | 1 | | | CO1 | |
| IV | Durability test of concrete (permeability test and Rapid Chloride Permeability Test (RCPT) | | | | | | | | | | 1 | | | CO2 | |
| V | Passing ability test on Self Compacting concrete using U-box, L-box, Fill-box, and J-ring test methods | | | | | | | | | | 1 | | | CO1 | |
| VI | Filling Ability of Self Compacting Concrete using slump flow, V-funnel test. | | | | | | | | | | 1 | | | CO2 | |
| VII | Non-destructive tests on concrete. | | | | | | | | | | 1 | | | CO1 | |
| VIII | Corrosion test on concrete | | | | | | | | | | 1 | | | CO2 | |
| IX | Testing of R.C. beams and study of their behaviour | | | | | | | | | | 2 | | | CO1 | |
| X | Testing of R.C. slab and study of their behaviour. | | | | | | | | | | 1 | | | CO2 | |
| XI | Use of various types of strain gauges. | | | | | | | | | | 1 | | | CO1 | |
| Total Hours | | | | | | | | | | | **12** | | |  | |
| **Essential Readings** | | | | | | | | | | | | | | | |
| 1. Gambhir, M.L., “Building and Construction Materials: Testing and Quality Control”, McGraw Hill, 2017. | | | | | | | | | | | | | | | |
| 2. McGraw Hill, 2017. 2. Neville, A.M., “Properties of Concrete’’, Standard Publishers Distributors, 2011. | | | | | | | | | | | | | | | |
| **Supplementary Readings** | | | | | | | | | | | | | | | |
| 1. Shetty. M.S., ‘’Concrete Technology”, S.Chand & Company Ltd, 2006. | | | | | | | | | | | | | | | |
| 2. Colin. D.J., “Fibre Reinforced Cements and Concrete,” Taylor and Francis Publishers, 1st edition 2006. | | | | | | | | | | | | | | | |
| 3. Geert D.S. Peter J.M. B., Peter D., John G. “Self Compacting Concrete,” Whittles Publishing, 1st edition 2008. | | | | | | | | | | | | | | | |