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| Image result for nit meghalaya logo | | | | **National Institute of Technology Meghalaya**  An Institute of National Importance | | | | | | | | | | | | | | | | | | | | | | | **CURRICULUM** | | | | | | |
| Programme | | | | **Bachelor of Technology in Civil Engineering** | | | | | | | | | | | | | Year of Regulation | | | | | | | | | | **2020-21** | | | | | | |
| Department | | | | **Civil Engineering** | | | | | | | | | | | | | Semester | | | | | | | | | | **IV** | | | | | | |
| Course  Code | | Course Name | | | | | | | | **Pre requisite** | | | | Credit Structure | | | | | | | | Marks Distribution | | | | | | | | | | | |
| L | | T | | | P | C | | INT | | | MID | | | END | | | | Total | |
| **CE 212** | | **Concrete Technology** | | | | | | | | **Nil** | | | | **3** | | **0** | | | **0** | **3** | | **50** | | | **50** | | | **100** | | | | **200** | |
| Course  Objectives | | **To understand the properties of ingredients of concrete** | | | | | | | | | | Course Outcomes | | | | CO1 | | | Test all the concrete materials as per IS code | | | | | | | | | | | | | | |
| **To study the behaviour of concrete at its fresh and hardened state** | | | | | | | | | | CO2 | | | Design the concrete mix using IS code methods. | | | | | | | | | | | | | | |
| **To study about the concrete design mix** | | | | | | | | | | CO3 | | | Determine the properties of fresh and hardened of concrete | | | | | | | | | | | | | | |
| **To know about the procedures in concreting** | | | | | | | | | | CO4 | | | Design special concretes and their specific applications | | | | | | | | | | | | | | |
| **To understand special concrete and their use** | | | | | | | | | | CO5 | | | ensure quality control while testing/ sampling and acceptance criteria | | | | | | | | | | | | | | |
|  | | | | | | | | | |  | | |  | | | | | | | | | | | | | | |
| 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** | **0** | **1** | **0** | **0** | | **0** | | **0** | | **2** | | | **0** | | | **0** | | **0** | | | **3** | | | **0** | | | | **3** |
| 2 | CO2 | | **3** | | **3** | **0** | **1** | **0** | **0** | | **0** | | **0** | | **2** | | | **0** | | | **0** | | **0** | | | **1** | | | **0** | | | | **2** |
| 3 | CO3 | | **2** | | **3** | **2** | **1** | **2** | **1** | | **0** | | **0** | | **0** | | | **0** | | | **0** | | **0** | | | **2** | | | **3** | | | | **2** |
| 4 | CO4 | | **2** | | **2** | **3** | **0** | **2** | **2** | | **3** | | **0** | | **1** | | | **0** | | | **0** | | **2** | | | **2** | | | **3** | | | | **2** |
| 5 | CO5 | | **2** | | **1** | **2** | **0** | **1** | **2** | | **3** | | **0** | | **2** | | | **0** | | | **0** | | **1** | | | **3** | | | **3** | | | | **3** |
| 6 | CO6 | | **0** | | **0** | **0** | **0** | **0** | **0** | | **0** | | **0** | | **0** | | | **0** | | | **0** | | **0** | | | **0** | | | **0** | | | | **0** |
| SYLLABUS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| No. | Content | | | | | | | | | | | | | | | | | | | | | | | Hours | | | | | | | COs | | |
| I | Introduction - Concrete materials - Cement: Physical tests on cement - Concrete materials - Tests on  aggregates - Quality of Water for mixing and curing - use of sea water for mixing concrete. | | | | | | | | | | | | | | | | | | | | | | | **6** | | | | | | | **CO1** | | |
| II | Mix Design - factors influencing mix proportion - Mix design by I.S. code method -Design of high strength concrete | | | | | | | | | | | | | | | | | | | | | | | **6** | | | | | | | **CO2** | | |
| III | Admixtures - accelerating admixtures - Retarding admixtures - water reducing admixtures – Airentraining admixtures - coloring agent - Plasticizers. Batching - Mixing -Transportation - Placing ofconcrete - curing of Concrete. | | | | | | | | | | | | | | | | | | | | | | | **6** | | | | | | | **CO3** | | |
| IV | Strength of Concrete - Shrinkage and temperature effects - creep of concrete - permeability of concrete- durability of concrete - Corrosion - Causes and effects - remedial measures- Thermal properties ofconcrete - Micro cracking of concrete. | | | | | | | | | | | | | | | | | | | | | | | **6** | | | | | | | **CO4** | | |
| VI | Special Concrete - lightweight concrete - Fibre reinforced concrete - Polymer-polymer modifiedconcrete - Ferrocement - Mass concrete - Ready mix concrete- Self compacting concrete- Qualitycontrol - Sampling and testing-Acceptance criteria | | | | | | | | | | | | | | | | | | | | | | | **6** | | | | | | | **CO5** | | |
| Total Hours | | | | | | | | | | | | | | | | | | | | | | | | **36** | | | | | |  | | | |
| **Essential Readings** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Shetty, M.S., Concrete Technology, Theory & Practice, S.Chand and Co, 2004. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| **Supplementary Readings** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Nevile, Properties of Concrete, Longman Publishers, 2004. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Santakumar A.R., Concrete Technology, Oxford University Press, New Delhi, 2007. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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