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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** |
| CourseCode | 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** |
| CourseObjectives | **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 onaggregates - 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.
 |
| 1. Gambhir, M.L., Concrete Technology, Tata McGraw Hill, 2004.
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| **Supplementary Readings** |
| 1. Nevile, Properties of Concrete, Longman Publishers, 2004.
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| 1. Santakumar A.R., Concrete Technology, Oxford University Press, New Delhi, 2007.
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