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| Image result for nit meghalaya logo | | | **National Institute of Technology Meghalaya**  An Institute of National Importance | | | | | | | | | | | **CURRICULUM** | | | |
| Programme | | | **Master of Technology** | | | | | Year of Regulation | | | | | | **2018-19** | | | |
| Department | | | **Civil Engineering** | | | | | Semester | | | | | | **II** | | | |
| Course  Code | | Course Name | | Pre requisites | | Credit Structure | | | | | Marks Distribution | | | | | | |
| L | T | | P | C | INT | | MID | | END | | Total |
| **CE576** | | Computational Method in Water Resources Engineering | | **None** | | **3** | **0** | | **0** | **3** | **50** | | **50** | | **100** | | **100** |
| Course  Objectives | | 1. To give an overview of computational techniques of interest with emphasis on the techniques. 2. To equip the students with capabilities to model and solve water resources problems. | | | Course Outcomes | | CO1 | | Able to model surface water, ground water flow problems applying finite difference and finite element technique and solve it applying numerical methods | | | | | | | | |
| CO2 | |  | | | | | | | | |
| CO3 | |  | | | | | | | | |
| CO4 | |  | | | | | | | | |
| CO5 | |  | | | | | | | | |
| SYLLABUS | | | | | | | | | | | | | | | | | |
| **No.** | **Content** | | | | | | | | | | | **Hours** | | | | **COs** | |
| I | **Introduction**  Review of numerical methods and solution techniques. | | | | | | | | | | | 06 | | | |  | |
| II | **Modeling water resources system**  Modeling concepts and overview of computer models for; Surface water systems, Subsurface water system; irrigation engineering and management, Coastal engineering | | | | | | | | | | | 10 | | | |  | |
| III | **Computing techniques**  Numerical methods, Finite difference and finite element methods, Applications in surface and ground water modeling, Solute transport problems, Pipe network analysis. | | | | | | | | | | | 10 | | | |  | |
| IV | **Artificial intelligence**  Applications in water resources engineering. | | | | | | | | | | | 10 | | | |  | |
| **Total Hours** | | | | | | | | | | | | **36** | | | |  | |
| **Essential Readings** | | | | | | | | | | | | | | | | | |
| 1. Niyogi, P., Chakrabarty, S. K., Laha, M. K., “Introduction to Computational Fluid Dynamics”, Pearson Education. | | | | | | | | | | | | | | | | | |
| 1. Reddy, J. N., “An Introduction to Finite Element Method”, Tata McGraw-Hill. | | | | | | | | | | | | | | | | | |
| **Supplementary Readings** | | | | | | | | | | | | | | | | | |
| 1. Chow, V.T, Maidment, D.R., Mays.L.W., “Applied Hydrology”, McGraw Hill. | | | | | | | | | | | | | | | | | |
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