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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** |
| CourseCode | 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** |
| CourseObjectives | 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.
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| **Supplementary Readings** |
| 1. Chow, V.T, Maidment, D.R., Mays.L.W., “Applied Hydrology”, McGraw Hill.
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