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|  | **National Institute of Technology Meghalaya**An Institute of National Importance | **CURRICULUM** |
| Programme | **Bachelor of Technology in Civil Engineering** | Year of Regulation | **2019-20** |
| Department | **Civil Engineering** | Semester | **V** |
| Course Code |  Course Name | Pre-Requisite | Credit Structure | Marks Distribution |
| **CE 355** | **Hydrology and Water Resources Engineering Laboratory** | **NIL** | L | T | P | C | Continuous Assessment | Total |
| **0** | **0** | **2** | **1** | **01 Experiment** | **10** | **100** |
| Course Objectives | To develop the student’s knowledge on various processes ofhydrologic cycle with detail understanding of its components. | Course Outcomes | CO1 | Student will be able to understand the various components ofhydrologic cycle that affect the movement of water in the earth. |
| To provide some knowledge about various forms of precipitationsand representation of hydrological data. | CO2 | Student will demonstrate the ability to perform analysis andrepresentation of hydrological data. |
| To develop understanding of surface yield and rainfall-runoffmodel. | CO3 | Student will be able to understand various techniques for measurementof precipitation and estimate abstractions from precipitation. |
| To make the student understand hydrologic flood routing. | CO4 | Student will be able to compute yield from a catchment anddevelop rainfall-runoff model. |
| To provide knowledge about ground water flow and ground waterstorage. | CO5 | Student will be able to formulate and solve hydrologic floodrouting model. |
|  | CO6 | Student will be able to understand the concept of occurrence ofground water, and its movement and storage beneath the earth |
| 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** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **3** |
| 2 | CO2 | **3** | **3** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **3** |
| 3 | CO3 | **3** | **3** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **3** |
| 4 | CO4 | **3** | **3** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **3** |
| 5 | CO5 | **3** | **3** | **0** | **0** | **0** | **0** | **3** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **3** |
| 6 | CO6 | **3** | **3** | **0** | **0** | **0** | **0** | **3** | **0** | **0** | **0** | **0** | **0** | **0** | **0** | **3** |
| SYLLABUS |
| No. | Content | Hours | COs |
| 1 | **Introduction to Darcy’s law** | 02 | **CO1 CO2 CO3 CO4 CO5****CO6** |
| 2 | **Determination of hydraulic conductivity** | 01 |
| 3 | **Steady flow into a well in unconfined aquifer** | 01 |
| 4 | **Steady flow into a well in confined aquifer** | 01 |
| 5 | **Measurement of infiltration using double ring infiltrometer** | 01 |
| 6 | **Rainfall measurement using rain gauge** | 01 |
| 7 | **Evaporation measurement using evaporimeter** | 01 |
| 8 | **Analysis of rainfall data** | 01 |
| 9 | **Analysis of evaporation data** | 01 |
| 10 | **Viva-voce and exam** | 02 |
| Total Hours | **12** |  |
| **Essential Readings** |
| 1. V. T. Chow, D. R. Maidment and L. W. Mays, “Applied Hydrology”, McGraw Hill, 1st Edition, 1988.
 |
| 1. K. Subramanya, “Engineering hydrology”, McGraw Hill, 2nd Edition, 1994.
 |
| **Supplementary Readings** |
| 1. V. P. Singh, “Elementary Hydrology”, Englewood Cliffs, NJ : Prentice Hall, 1st Edition, 1992.
 |
| 1. D. K. Tood and L. W. Mays, “Ground Water Hydrology”, Wiley India Pvt. Ltd, 3rd Edition, 2004.
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