	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		
			L	T	P	C	Continuous Assessment		Total
CE 355	**Hydrology and Water Resources Engineering Laboratory**	**NIL**	**0**	**0**	**2**	**1**	**01 Experiment**	**10**	**100**

Course Objectives	
	To develop the student's knowledge on various processes of hydrologic cycle with detail understanding of its components.
	To provide some knowledge about various forms of precipitations and representation of hydrological data.
	To develop understanding of surface yield and rainfall-runoff model.
	To make the student understand hydrologic flood routing.
	To provide knowledge about ground water flow and ground water storage.

Course Outcomes	
CO1	Student will be able to understand the various components ofhydrologic cycle that affect the movement of water in the earth.
CO2	Student will demonstrate the ability to perform analysis andrepresentation of hydrological data.
CO3	Student will be able to understand various techniques for measurementof precipitation and estimate abstractions from precipitation.
CO4	Student will be able to compute yield from a catchment anddevelop rainfall-runoff model.
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**	**04**	
3	**Steady flow into a well in unconfined aquifer**	**04**	
4	**Steady flow into a well in confined aquifer**	**04**	
5	**Measurement of infiltration using double ring infiltrometer**	**04**	
6	**Rainfall measurement using rain gauge**	**04**	
7	**Evaporation measurement using evaporimeter**	**04**	
8	**Analysis of rainfall data**	**04**	
9	**Analysis of evaporation data**	**04**	
10	**Viva-voce and exam**	**02**	
	Total Hours	**36**	

Essential Readings

1. V. T. Chow, D. R. Maidment and L. W. Mays, "Applied Hydrology", McGraw Hill, 1st Edition, 1988.
2. 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.
2. D. K. Tood and L. W. Mays, "Ground Water Hydrology", Wiley India Pvt. Ltd, 3rd Edition, 2004.