

**Course Name:**

Engineering Hydrology

**Course Number:**

20629

**Credit:**

2

**Prerequisite:**

Engineering Probability and Statistics

**Course Description (Objectives):**

Provide a broad understanding of a wide range of topics in hydrology and meteorology. In this course students can learn about water cycle and its interaction with energy budget. All hydro meteorological variables used in the water budget will be defined.

**Course Content (outline):**

- Introduction
  - Hydrological Cycle and Hydrological Budget Equation
  - Water Distribution in Space and Time
  - Solar Radiation and the Earth Energy Balance
  - Key Hydrometeorological Processes (Atmospheric & Oceanic Circulation)
- Precipitation
  - Types of Precipitation
  - Precipitation Formation
  - Precipitation Graphs and Data
  - Precipitation Measurements
- Evaporation and Transpiration (Evapotranspiration)
  - Concept
  - Measurements and Estimation
  - Equations
- Infiltration
  - Concept
  - Measurement
  - Equations/Indices
- Groundwater
  - Concept
  - Hydraulic Conductivity
  - Aquifers
  - Well
  - Equations
- Runoff
  - Watershed
  - Hydrograph
  - Unit Hydrograph

- Flood Routing
- Statistics and Probability in Hydrology

**References:**

- Hydrology: An Introduction to Hydrologic Science, R. L. Bras.
- Physical Hydrology, S. L. Dingman.
- Hydrology and Floodplain Analysis, Bedient & Huber, Third Edition, Prentice Hall, 2002.
- Applied Hydrology, Ven Te Chow, D. R. Maidment, L.W. Mays, McGraw Hill.
- Introduction to Hydrology, W. Viessman, Jr., G. L. Lewis, J. W. Knapp, Harper Collins Publishers.

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