

Subject: Basic Hydrology

Course number : DMP280E

Instructor : Prof. A. W. Jayawardena

Term / Time : Fall through Winter

1 Course Description

The aim of this course is to introduce and expose the students to the basic concepts of hydrology including the different processes, quantification of hydrological variables and their measurement and/or estimation, unit hydrograph methods and the application of probability and statistics in hydrology

2 Course Outline (Course Topics)

Week

- 1 : Basic concepts of the Hydrological Cycle; Processes in the Hydrological Cycle
- 2 : Precipitation – Types, measurement and presentation of data
- 3 : Extreme weather – cyclones, typhoons, hurricanes
Evaporation and evapo-transpiration; Infiltration
- 4 : Runoff – Components, measurement and estimation of runoff
- 5 : Peak discharge estimation; Rational Method, Baseflow Separation
- 6 : Concept of rainfall excess; Role of infiltration and evaporation
- 7 : Unit Hydrograph Methods I
- 8 : Unit Hydrograph Methods II
- 9 : Remote sensing in Hydrology
- 1 0 : Satellite observation of rainfall (1) (by JAXA)
- 1 1 : Satellite observation of rainfall (2) (by JAXA)
- 1 2 : Probability and statistics in hydrology I; IDF curves
- 1 3 : Probability and statistics in hydrology II; Extreme value distribution
- 1 4 : Basic concepts of Stochastic Hydrology
- 1 5 : Examination

3 Grading

60% by examination; 40% by in-course assessment

4 Textbooks

4-1 Required

4-2 Others

References (selected)

- Linsley, R. K., Kohler, M.A. and Paulhus, J.L.H. (1988): Hydrology for Engineers, SI Metric Edition), McGraw-Hill Book Company
- Raudkivi, A. J. (1979): Hydrology – An Advanced Introduction to Hydrological Processes and Modelling, Pergamon Press.
- Shaw, E. M. (1983) Hydrology in Practice, Van Nostrand Reinhold (UK)
- Singh, V. P. (1992): Elementary Hydrology, Prentice Hall
- Viessman, W., Lewis, G. L. and Knapp, J.W. (1989): Introduction to Hydrology (Third Edition), Harper Row, Publishers.
- Wanielista, M., Kersten, R. and Eaglin, R. (1997): Hydrology: Water quantity and quality control, Second Edition, John Wiley & Sons Inc.
- Course Lecture Notes