

Course Name:
Stochastic Hydrology

Course Number:
20660

Credit:
3

Course Content (outline):

- Chapter 1: Probability
 - Basic definitions and axioms
 - Probability density function
 - Cumulative distribution function
 - Marginal/Joint/Conditional distribution
 - Statistics and parameters of distribution

- Chapter 2: Main probability distributions in hydrology
 - Discrete and continuous distributions
 - Risk analysis

- Chapter 3: Stochastic
 - Random variables/Processes
 - Derived distribution
 - Important process (Stationary process; White noise; Renewal process; Markov Chain)

- Chapter 4: Time series analysis
 - ARMA (AR; MA; ARMA)

- Chapter 5: Data analysis
 - Hypothesis testing
 - Statistical measures
 - Probability matching
 - Method of moments
 - Maximum likelihood
 - Goodness of fit

References:

- “Random Functions and Hydrology”, R. L. Bras.
- “Statistical Methods in the Atmospheric Sciences”, D.S Wilks.
- “Statistical Methods in Hydrology”, C. T. Haan.