

**Course Name:**

Water Resource Systems Analysis 2

**Course Number:**

20649

**Credit:**

3

**Course Content (outline):**

- Modelling uncertainty
  - Generating values from known probability distributions
  - Monte Carlo simulation
  - Stochastic simulation
  - Chance constrained models
  - Markov processes and transition probabilities
  - Dynamic programming
  - Stochastic optimization
- Nonlinear programming: Solution methods
- Modelling uncertainty: Model sensitivity and uncertainty analysis
- Multi-objective analysis
- Water resources systems management under uncertainty- a Fuzzy set approach

**References:**

- “Water Resource Systems Planning and Analysis”, D.P. Loucks, et al., Prentice-Hall, Inc., 1981 (Text Book).
- “Water Resources Systems Planning and Management: An Introduction to Methods, Models and Applications (with contributions from Jerry R. Stedinger and Jozef P.M. Dijkma)”, D.P. Loucks & E. van Beek, UNESCO Publishing, 2006 (Text Book).
- “Managing Water Resources: Methods and Tools for a Systems Approach”, S. P. Slobodan, UNESCO Publishing 2009 (Text Book).
- “Handouts and Journal Papers”