

Course Name:

Numerical Methods in Water Engineering

Course Number:

20640

Credit:

3

Course Content (outline):

- Modelling, Numerical model and protocol of numerical simulation
- Characteristics for Partial differential Equations
- Finite Difference Approximations
 - Truncation errors, Consistency, Stability
- Diffusion Equation
 - Alternating Direction Method
- Advection Equation
- Advection-Dispersion Equation
- Open Channel Flow
- Variably Saturated Flow
- Finite element approximations
- Groundwater flow
- Boundary element method
- Shallow water wave

References:

- “Numerical Methods for Differential Equations”, M.A. Celia & W.G. Gray, 1992.
- “Fundamentals of Numerical Reservoir Simulation”, D.W. Peaceman, 1977.
- “Numerical Recipes”, B.P. Flannery et al., W.H. Press, 1986.