CE 510: Water Resources System Analysis (3-0-0:3)

Course objectives: To comprehend basic concepts for planning and design of water resources systems and to understand different types of optimization approaches in different aspects of water resources engineering.

Introduction
Basic concepts of systems, Need for systems approach in water resources, System design techniques.

Problem formulation
Optimization techniques, LP, NLP, Dynamic programming, Genetic algorithm.

Reservoir optimization
Reservoir operation problems.

National water policies
Public involvement, Social impact, Economic analysis.

Text Books and References:
1. Loucks, D. P., Stedinger, P. J. R. and Haith, D. A., "*Water Resources Systems Planning and Management",* Prentice Hall.
2. Neil, G.S., "*Water Resources Planning",* McGraw Hill.
3. National Water Policy, Ministry of Water Resources, Government of India, 1987.

Expected outcome: The student shall get an understanding of the engineering of water resource systems in general and also obtain skills for mathematical modelling of both natural and engineered water resource systems that are used to analyze system components.
