

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Semester: 2

Water Resources Management

Subject Name Hydro System Engineering And Management

| Sr.No | Course content |
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| 1 | Introduction to the concept of a system engineering, System application to water resources engineering. |
| 2 | Optimization techniques, graphical, Linear Dynamic and stochastic programming |
| 3 | Simulation and mathematical modeling of water resources systems Application to reservoir optimization and multireservoir planning. |
| 4 | Optimal allocation of water resources for various uses. Case studies. |
| 5 | Introduction to soft computing models Like ANN, GAGP & Fuzzy Logic, and Hybrid Techniques. |

List of Tutorials

1. Discuss the application of system engineering in the field of water resources
2. How the liner programming problem can be solve by graphical method
3. What are the advantage and limitation of linear programming?
4. Enlist the different optimization technique and briefly discuss them.
5. Discuss 1-langrangian multiplayer 2-kuhn-tucker condition for non-linear Programming
6. Differentiate stochastic and deterministic variables
7. Explain application of simulation and modelling technique water resources

Reference Books:

1. Water resources system engineering - Hall & Dracup
2. System Approach to water resources management edited by A.K.Biswas
3. Introduction to operation research-Computer oriented Algorithmic Approach-Billy E.Gillett
4. Optimisation-theory and application – S.S.Rao
5. Hierarchical analysis of water resources system – Yacov Y. Haimes
6. Water Resources planning and Management – Louks, stedinger and Haith
7. Hydro system Engineering and Management – L. W. Mays & Y. K. Tung
8. Water Resources Systems Planning and Management – Chaturvedi
9. Applied Water Resources System Planning – David C. Major & Robert Lanton
10. Mathematical Foundations for design in Civil Engineering–Robert M. Star & R. M. Nicholas
11. Optimal Control of Hydro systems - Larry W Mays