8CE177 Water Resources Planning and Management

L-T-P-Cr: 3-0-0-3

Prerequisite:

A Pass grade or having obtained at least 75% attendance and minimum of 50% marks in Hydrology and Irrigation Engineering.

Objective: This course provides a firm foundation in water excess management concepts, storm water control and economics in water resources, linear programming for water resources, integrated water resources management and planning.

Theory: 1. Flood Control- Introduction to floods, Floodplain management, Flood control alternatives, Flood damage and net benefit estimation, Flood estimation and forecasting. 7 Lectures

2. Drought Management- Types of drought, Drought management options, Drought severity, Economic aspects of water shortage. 5 Lectures

3. Water Quality-Water pollution, Basic parameters of water, Inorganic and organic chemicals, Water quality management. 6 Lectures

4. Engineering Economy in Water Resources - Benefit-cost analysis, Evaluation of alternatives, Price elasticity of water demand, Demand models. 8 Lectures

5. Linear Programming and its Application in Water Resources - Introduction to linear programming, Linear programming model, Assumptions of linear programming, Simplex method for linear programming. 8 Lectures

6. Water Resources Planning - Levels of planning, Phases and objectives, Data requirements, Project formulation and evaluation, Environmental considerations, Multipurpose projects. River Basin Planning, Integrated Water, Resources Management. 8 Lectures

Text Books: 1. Linsley, R.K., Franzini. J.B., Freygerg, D.L., and Tchnbanoglous G. (1992): Water Resources Engineering, McGraw Hill Book Co. 2. Mays, L.W. (2005): Water Resources Engineering, John Wiley & Sons, Inc. Reference Books: 1. Hillier F.S. and Lieberman G.J. (2001): Introduction to Operation Research, McGraw Hill Book Co. 2. Cech T.V. (2009): Principles of Water Resources: History, Development, Management and Policy, 3rd edition, John Wiley and sons inc. 3. Stephenson D. (2003): Water Resources Management, Swets and Zeitlinger B.V. Lisse, the Netherlands. 4. Chandrakumar G. and Mukundan N. (2006): Water Resources Management: Thrust and Challenges, Sarup and sons. 5. Jain, S.K. and Singh, V.P., Water Resources, Oxford Publications.

Expected Outcome: Students will be able to understand the processes in water resources and to impart the knowledge of planning and managements of water resources.