CE213 Jan 3:0
Systems Techniques in Water Resources & Environmental Engineering

Instructor
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Department: Civil Engineering
Course Time: Tue., Thu., 9:30 - 11 AM
Lecture venue: Lecture Hall, First Floor, Dept of Civil Engg
Detailed Course Page: http://civil.iisc.ernet.in/~nagesh/stwree.htm

Announcements
http://civil.iisc.ernet.in/~nagesh/stwree.htm

Brief description of the course
Optimization Techniques - Constrained and Unconstrained optimization;
Kuhn-Tucker conditions; Linear Programming (LP),
Dynamic Programming (DP); Multi-objective optimization;
Applications in Water Resources, water allocation, Reservoir sizing,
Multipurpose reservoir operation for hydropower, flood control and irrigation.
Review of probability theory;
Stochastic optimization - Chance constrained LP, Stochastic DP;
Surface water quality control; Simulation - Reliability,
Resiliency and Vulnerability of water resource systems.

Prerequisites
none

Syllabus
Optimization Techniques - Constrained and Unconstrained optimization;
Kuhn-Tucker conditions; Linear Programming (LP),
Dynamic Programming (DP); Multi-objective optimization;
Applications in Water Resources, water allocation, Reservoir sizing,
Multipurpose reservoir operation for hydropower, flood control and irrigation.
Review of probability theory;
Stochastic optimization - Chance constrained LP, Stochastic DP;
Surface water quality control; Simulation - Reliability,
Resiliency and Vulnerability of water resource systems.

**Course outcomes**
* Learning Deterministic optimization techniques such as Linear Programming, Dynamic Programming, Optimization using Calculus.
* Application of above system techniques in the files of Water Resources and Environmental Engg such as reservoir sizing, planning and operation, river water quality management, water supply systems, irrigation management.

**Grading policy**
20% for assignments, 15% for mid-term, 15% for term-paper and 50% end-term exam.

**Assignments**
Assignments sheets (4-5) are posted in the website
http://civil.iisc.ernet.in/~nagesh/stwree.htm

**Resources**
http://civil.iisc.ernet.in/~nagesh/stwree.htm
