

Module 6: Dynamic Programming Applications

Learning Objectives

The basic concepts of dynamic programming like concept of sub-optimization and principle of optimality were discussed in module 5. The formulation of recursive equations for a general problem and computational procedure was also discussed. In this module, the application of these concepts in some common fields are discussed.

The module demonstrates the applications of dynamic programming in the fields of structural engineering and water resources engineering. The problems discussed are design of continuous beams, geometric layout of truss, water allocation, capacity expansion and reservoir operation.

At the end of the module the reader will be able to

1. Formulate the dynamic programming problem.
2. Formulate the optimal design of continuous beams.
3. Formulate the optimal geometric layout of a truss.
4. Formulate and solve water allocation problem as a sequential process.
5. Formulate and solve capacity expansion problem.
6. Formulate and find steady state operating policies for a reservoir.