

Module 7: Integer Programming

Learning Objectives

The previous modules discussed about the optimization methods using linear programming and dynamic programming techniques with almost no limit in the values taken by decision variables. But many practical problems require the constraint of integrality in decision variable values. This can be solved using Integer programming which is the main objective of this module.

The module gives a description of Integer programming, with emphasis on Integer Linear Programming (ILP), its relation with linear programming and the various types of integer programming,. Among the various techniques for solving ILP, a well known method *Gomory's cutting plane method* is explained. The concept of this method is explained graphically to give the reader a better understanding. The generation of *Gomory constraints* are also well explained for all- integer LP and also mixed ILP, which will in turn help the reader to solve any type of integer programming.

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

1. Formulate the ILP.
2. Generate Gomory constraints.
3. Solve all-integer LP by Gomory cutting plane method.
4. Solve mixed Integer LP by Gomory cutting plane method.