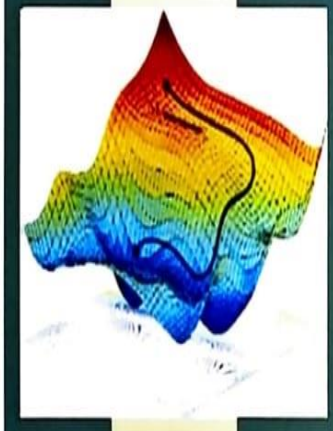
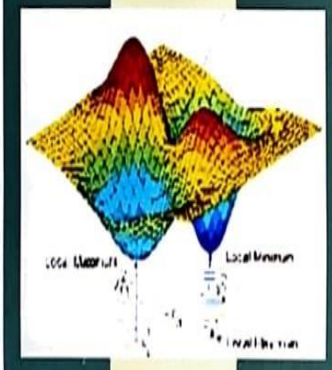
About the Course

The Certificate Course "Basics of Optimization Techniques" is open to all students who have passed the Higher Secondary Examination. The aim of this course is to make the learner acquire knowledge on the basics of optimization problems. The emphasis will be on problem solving skills for managerial decisions.

The course will be of 30 hours duration with 5 hours per week (maximum 6 weeks).





COURSE WILL BE IN ONLINE MODE

For Details & Registration Contact

Gafoor I
Course Coordinator
Mob: 9895297473
E-Mail : Gafoorbabul@namcollege.ac.in

DEPARTMENT OF MATHEMATICS
N A M COLLEGE KALLIKKANDY

CERTIFICATE COURSE
2020-21

Basics of Optimization Techniques

Offered by
Department of Mathematics
NAM College Kallikkandy

Course Introduction and Objectives

Optimization is the process by which the optimal solution to a problem, or optimum, is produced. The word optimum has come from the Latin word ***optimus***, meaning best. There has been a host of contributions, from Archimedes to the present day, scattered across many disciplines. Many of the earlier ideas, although interesting from a theoretical point of view, were originally of little practical use, as they involved a intimidating amount of computational effort. Now modern computers perform calculations, whose time was once estimated in man-years, in the figurative blink of an eye. Thus it has been worthwhile to resurrect many of these earlier methods. The advent of the computer has helped bring about the unification of optimization theory into a rapidly growing branch of applied Mathematics. The major objective of this course is to provide an introduction to the some basic linear optimization methods also known as Linear programming Problem. The course is designed for under graduate students studying Mathematics, engineering, business & Commerce etc.

This course is focussing on Linear Programming Problem (LPP) and two methods – Graphical Method and Simplex Method- to solve a Linear Programming problem.

The content of the course include three modules and the topics in each module are mentioned in syllabus

Objectives of the course are

- To understand the optimization techniques in real time situations
- To frame the Mathematical model of a real time optimization problems
- To understand the different forms of Linear Programming problem (LPP)
- To acquaint with graphical method to solve LPP
- To acquaint with the terms used in Simples Method
- To expertise in solving LPP using Simplex method

Prerequisite for the course

The Course designed in a simple manner such a way that, anyone with high school level mathematical skills can follow easily. Prerequisite include some basic logical ideas, basic numerical & computational skills and a little linear geometry .However the Tutor will discuss this ideas whenever it is necessary.

Course Content (Syllabus)

Module 1. Introduction to Optimisation Method (7 hours)

1.1. Literature of optimization techniques
1.2. Mathematical modelling
1.3. Linear Programming Problems –L.P.P
1.4. Canonical and Standard form of LPP

Module 2. Solution of LPP – Graphical Method (8 hours)

2.1. Geometry of linear inequalities
2.2. Convex Set and convex Hull
2.3. Graphical Method

Module 3. Solution of LPP – Simplex Method (15 hours)

3.1. Basic definitions
3.2. Simplex Algorithm
3.3. Solution using Simplex Method

Text Book: K.Swarup, P.K.Gupta and M. Mohan, Operations Research (14th Edn), S.Chand Publication

Reference:

1. S.Kalavathy, Operation Research (4th Edn), Vikas Publishers
2. Hamdy A.Taha, Operation Research (9th Edn), Pearson
3. P.K.Gupta, D.S Hira, Problems in Operation Research , S.Chand Publishers
4. G.Hadley, Linear Programming , Narosa Publishers