NONLINEAR PROGRAMMING

MATHEMATICS

PROF. S.K. GUPTA
Department of Mathematics
IIT Roorkee

TYPE OF COURSE : Rerun | Core | UG/PG
INTENDED AUDIENCE : B.E/B.Tech, M.E/M.Tech, M.Sc, PhD
COURSE DURATION : 4 weeks (27 Aug'18 - 21 Sep'18)
EXAM DATE : 28 Oct 2018

COURSE OUTLINE :

This course is offered to UG and PG students of Engineering/Science background. It contains methods to solve nonlinear optimization problems which includes convex programming, KKT optimality conditions, quadratic programming problems, separable methods, geometric and dynamic programming. It also covers some search techniques which are used to solve nonlinear programming problems. It plays a vital role in solving various engineering and science problems.

ABOUT INSTRUCTOR :

Dr. S.K. Gupta is an Associate Professor in the Department of Mathematics, IIT Roorkee. His area of expertise includes Nonlinear and Fuzzy optimization. He has guided three PhD theses and has published more than 40 papers in various international journals of repute. He has also developed a NPTEL online certification course on "Mathematical methods and its applications" (jointly with Prof. P. N. Agrawal).

COURSE PLAN :

Week 01 : Convex Sets and Functions, Properties of Convex Functions-I, Properties of Convex Functions-II, Properties of Convex Functions-III, Convex Programming Problems.

Week 02 : KKT optimality conditions, Quadratic Programming Problems-I, Quadratic Programming Problems -II, Separable Programming-I, Separable Programming-II.

Week 03 : Geometric Programming-I, Geometric Programming-II, Geometric Programming-III, Dynamic Programming-I, Dynamic Programming-II.

Week 04 : Dynamic Programming-III, Dynamic Programming-IV, Search Techniques-I, Search Techniques-II, Search Techniques-III.