

Course Number and Name												
BCE094 - OPTIMIZATION TECHNIQUES												
Credits and Contact Hours												
3 & 45												
Course Coordinator's Name												
Dr.Krishnakumar												
Text Books and References												
TEXT BOOKS:												
<ul style="list-style-type: none"> Rao S.S,"Optimization – Theory and applications", Wiley Easter Ltd., 1979. 												
REFERENCES:												
<ul style="list-style-type: none"> David G.Luerbeggan, "Introduction to Linear and Non Linear Programming", Addison Wesley Publishing Co. 1973. Hadley G. "Nonlinear and – dynamic programming" Addison Wesley Publishing Co. 1964. Cordan C.C. Beveridge and Robert S. Schedther, "Optimization, Theory and Practice" McGraw Hill Co.1970. HarndyA.Tahh. "operations Research, An Introduction", Macmillan Publishers Co.NewYork,1982. Beightferand S. others, "Foundations of Optimization Pill", New Delhi, 1979. 												
Course Description												
<ul style="list-style-type: none"> To introduce the students to the basic concepts and principles of optimization, linear programming and queuing theory 												
Prerequisites						Co-requisites						
Fundamentals of Computing and Programming						NIL						
required, elective, or selected elective (as per Table 5-1)												
Course Outcomes (COs)												
CO1	Understanding the Concept of optimization and classification of optimization problems.											
CO2	Formulation simplex methods variable with upper bounds											
CO3	Study the Queuing Model, poison and exponential distributions											
CO4	Understand the maximization and minimization of convex functions											
CO5	To study equality constraints, inequality constraints											
Student Outcomes (SOs) from Criterion 3 covered by this Course												
	COs/SOs	a	b	c	d	e	f	g	h	i	j	k
	CO1							M	H			
	CO2							M	H			
	CO3	L			M			M	H			
	CO4							M	H			

	CO5							M	H				
List of Topics Covered													
UNIT I	INTRODUCTION												8
Concept of optimization – classification of optimization – problems.													
UNIT II	LINEAR PROGRAMMING												10
Examples of linear programming problems – formulation simplex methods variable with upper bounds – principle- duality -dual simplex method - sensitivity analysis – revised simplex procedure – solution of the transportation problem – assignment – network minimization – shortest route problem – maximal two problem – L.P. representation of networks.													
UNIT III	QUEUING THEORY												9
Queuing Model, poison and exponential distributions -Queues with combined arrivals and departures- random and series queues.													
UNIT IV	UNCONSTRAINED OPTIMIZATION												9
Maximization and minimization of convex functions. Necessary and sufficient conditions for local minima – speed and order of convegence – univariate search – steepest and descent methods- metcher reeves method -conjugate gradient method.													
UNIT V	CONSTRAINED OPTIMIZATION												9
Necessary and sufficient condition – equality constraints, inequality constraints -kuhu – tucker conditions – gradient projection method – penalty function methods – cutting plane methods of sibel directions.													