Course Number and Name
BME702 - OPERATIONS RESEARCH FOR ENGINEERS
Credits and Contact Hours
4&60
Course Coordinator's Name
Ms.Subhashini
Text Books and References
TEXT BOOKS : 1. Kanti Swarup, Gupta, P.K and Manmohan, "Operations Research", Sultan Chand & Sons, New Delhi. 1997 **REFERENCES:** 1. Handy A. Taha, "Operations Research", 7th Edn. Prentice Hall of India. 2007. 2. Gupta and Hira DS " Operations Research", S. Chand & Co, New Delhi, 2006 3. Paneerselvam.R. "Operations Research", PHI, New Delhi. 2009 . 4. www.**study**nama.com/.../312-**Operations-Research**-lecture-notes-**ebook-p**...
Course Description
To impart knowledge about various tools in Operations Research to apply and solve real life problems in Engineering.

Prerequisites	Co-requisites
Mathematics I, II & III	Nil

required, elective, or selected elective (as per Table 5-1)
Required

Course Outcomes (COs)	
CO1	Formulate a raw problem into LPP or TP or AP and solve them by using relevant method.
CO2	Solve network problems by applying PERT or CPM concept.
CO3	Find optimum stock level in an inventory system with many products.
CO4	Solv**e** queuing problems with single and multiple channels.
CO5	Make decisions for replacement of equipments under stochastic situations.
CO6	Learn industrial concepts of inspection and output

Student Outcomes (SOs) from Criterion 3 covered by this Course

COs/SOs	a	b	c	d	e	f	g	h	i	j	k	l
CO1		H						H				
CO2	H						L					H
CO3	H							M				H
CO4				M		M			H			
CO5												
CO6												H

List of Topics Covered

UNIT – I LINEAR PROGRAMMING 12

Introduction to phases of Operations Research – Linear programming – formulation of the problem – graphical method – simplex method – two phase method – Assignment problems – Transportation models – Vogel's approximation method – Modi method – unbalanced transportation problem – degeneracy in transportation models.

UNIT – II RESOURCE SCHEDULING AND NETWORKS 12

Resource scheduling – Sequencing n jobs through 2 machines and 3 machines. Networks – PERT and CPM – Network diagrams – shortest route – minimum spanning tree – probability of achieving completion date – crash time – cost analysis – resource smoothing and resource levelling.

UNIT – III INVENTORY AND REPLACEMENT MODELS 12

Inventory models- Types of Inventory and variables in the Inventory problem – deterministic models- Replacement models – Replacement of items that deteriorate with time – equipment that fails completely and their analysis – factors for evaluation of proposals of capital expenditures and comparison and alternatives – present value average investment – rate of return pay off period – individual and group replacement policy.

UNIT – IV QUEUEING MODELS 12

Queuing theory – queuing system and structure – Kendalls's notation– Poisson arrival and exponential service time – characteristic of queuing models – single channel and multiple models – simulation.

UNIT –V DECISION MODELS 12

Game theory –Saddle point-Maximin-Minimax principle-Two person zero sum games(mixed Strategies)-Graphical method for 2×n or m×2 games-Dominance Property-Oddment method.