BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI

SECOND SEMESTER 2017-2018

Course Handout Part II

In addition to part-I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course No. : **MATH F242**
Course Title : **OPERATIONS RESERACH**
Instructor-in-charge : **DK SATPATHI**

1. **Scopes and Objective of the Course:**

This course begins with applications overview of Operations Research, and introduces dynamic programming and network models. After a review of probability distributions, inventory models and queuing systems will be covered. Decision- making under certainty, risk, and uncertainty; along with an introduction to game theory will be dealt. Finally simulation techniques, introduction for estimating solutions to problems, that are not amenable to conventional solution techniques, will be made. Students will also be taught the basic concepts on system reliability.

2. Text Book:

1. Hamdy A Taha, "Operations Research: An Introduction", Pearson Education, Ninth Edition, 2012.
2. Venkateswaran S and B. Singh, "Operations Research" EDD Notes.Vol.3, 1997.

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3. Reference:

1. Hillier and Lieberman, "Introduction to Operations Research", T M H, Eighth Edition, 2006.
2. Bernard W. Taylor, "Introduction to Management Science 8e", Prentice hall
3. Anderson, Sweeney and Williams, "Quantitative methods for business 8e", Thomson South Western.
4. Ayyub, B.M. and McCuen R.H., "Probability, Statistics and Reliability for Engineers and Scientists", Chapman & Hall 2e, 2003.

4. Lecture Plan

Lecture Nos.	Learning Objectives	Topics to be Covered	Chapter in the Text Book
1	Introduction to Operations Research	Introduction, Historical Development, Impact of O.R., Phases of O.R., Overview of O.R., Modeling Approach	Chapter 1 (T1)
2-4	Review of Basic Probability	Random variables, Binomial, Poisson, Exponential and Normal Distribution	Chapter 14 (T1)
5-13	Introduce Queueing Systems	Definition, Birth and Death process, Role of Exponential Distribution, Generalized Poisson Queueing Models, Specialized Poisson Queues.	Chapter 7 (T2)

14- 19	When to produce / purchase and how much	Deterministic and Probabilistic Inventory Models	Chapter 8 (T2)
20-24	How to solve complex system and basic concept of simulation	Introduction, Generation of random variates from different distributions, Simulation of Single-server queueing model and inventory model.	Chapter 9 (T2)
25-29	To under stand the basic concept of Reliability	Basic concepts, Hazard rate function, Reliability of the systems, failure time distributions.	Chapter 6 (T2)
30- 33	Learn about Decision analysis and Game theory	Decision analysis under uncertainty and Game Theory	Chapter 15 (T1)
34-37	To understand dynamic programming	Deterministic Dynamic Programming,	Chapter 12 (T1)
38-42	Learn basic concepts Network Models	Definition, Minimal Spanning tree Algorithm, Shortest route Problem, CPM and PERT	Chapter 6 (T1)

5 .Evaluation Scheme:

Component	Duration	Weightage (%)	Date & Time	Nature of Component
Mid-Semester Test	90 mts	35	6/3 9.00-10.30 AM	Closed Book
Announced Quizzes	15 mts	10	There will be 3 announced (announced in the previous lecture class) quizzes which will be conducted at the last 15 mts of some of the lecture/tutorial classes. Out of 3, best 2 will be chosen. No makeup will be granted for this component	Closed book
Seminar		10		
Comprehensive Examination	3 hours	45	03/05 FN	2 hours Closed book and 1 hour Open book

6. Make-Up Policy: Only genuine cases will be entertained.

7. Chamber Consultation Hours: To be announced in the class.

8. Notice: Notices concerning this course will be displayed on CMS /Mathematics Notice Board.

INSTRUCTOR-IN-CHARGE