



INSTRUCTION DIVISION
SECOND SEMESTER 2015-2016
Course Handout Part II

Date:12.01.2016

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 RESEARCH
Instructor-in-charge : CHANDRA SHEKHAR

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.
2. Venkateswaran S and B. Singh, "Operations Research" EDD Notes.Vol.3, 1997.

3. Reference:

1. Hillier and Lieberman, "Introduction to Operations Research", T M H, Eighth Edition, 2006.
2. Winston, "Operations Research, Application and Algorithms", 4th edition, Thomson
3. Ravindran, Phillips and Solberg, "Operations Research: Principles and Practice", Wiley India 2/e, 2007.
4. Ravindran, "Operations Research: Methodology", CRC Press (Taylor & Francis Group), 1e, 2011.
5. Gross and Harris, "Fundamentals of Queuing Theory", Wiley India, 3/e, 1998.





4. Lecture Plan

Learning Objectives	Topics to be Covered	Lecture Nos.	References
Introduction to Operations Research	Introduction, Historical Development, Impact of O.R., Phases of O.R., Overview of O.R., Modeling Approach	1	Chapter 1 (T1)
Review of Basic Probability	Random variables, Binomial, Poisson, Exponential and Normal Distribution	2-4	Chapter 14 (T1)
Queueing Systems	Definition, Birth and Death process, Role of Exponential Distribution, Generalized Poisson Queueing Models, Specialized Poisson Queues.	5-16	Chapter 7 (T2)
Inventory Models	Deterministic and Probabilistic Inventory Models	17- 22	Chapter 8 (T2)
Simulation Modeling	Introduction, Generation of random variates from different distributions, Simulation of Single-server queueing model and inventory model.	23-27	Chapter 9 (T2)
Reliability	Basic concepts, Hazard rate function, Reliability of the systems, failure time distributions.	28-30	Chapter 6 (T2)
Decision analysis and Game theory	Decision analysis under uncertainty and Game Theory	31- 34	Chapter 15 (T1)
Dynamic Programming	Deterministic Dynamic Programming,	35-38	Chapter 12 (T1)
Network Models	Definition, Minimal Spanning tree Algorithm, Shortest route Problem, CPM and PERT	39-42	Chapter 6 (T1)

5. Evaluation Scheme:

Component	Duration	Max. Marks	Date & Time	Remarks
Mid Semester	90 minutes	70	16/3 9:00 - 10:30 AM	CB
Tutorial/Quiz/Assignment		40	To be announced	CB/OB
Comprehensive	3 hours	90	7/5 FN	Partially CB

- 6. Make-Up Policy:** Only genuine cases will be entertained. For surprise quizzes/Assignment/Tutorial, there will be no make-up.
- 7. Chamber Consultation Hours:** To be announced in the class.
- 8. Notice:** Notices concerning this course will be displayed on Nalanda and Notice Board, Department of Mathematics only.

INSTRUCTOR-IN-CHARGE

