

SECOND SEMESTER 2018-19

07-01-2019

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**

Instructor : PTV Praveen Kumar

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, Tenth Edition, 2012.
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. Bernard W. Taylor, “Introduction to Management Science 8e”, Prentice hall
3. Anderson, Sweeney and Williams, “Quantitative methods for business 12e”, Thomson South Western, 2013
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 understand the basic concept of Reliability | Basic concepts, Hazard rate function, Reliability of the systems, failure time distributions. | Chapter 6 (T2) |
| 30- 32 | Learn about Decision analysis and Game theory | Decision analysis under uncertainty and Game Theory | Chapter 15 (T1) |
| 33-36 | To understand dynamic programming | Deterministic Dynamic Programming, | Chapter 12 (T1) |
| 37-40 | 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 min | 32 | 11/3  11.00 -12.30 PM | Closed Book |
| \* Quizzes (5) | 15 min | 24 |  | Closed Book |
| Comprehensive Examination | 3 hours | 44 | 01/05 AN | 50%Closed Book  50%Open Book |

**\*** The quizzes will be announced in the previous lecture class and will be conducted towards the end of the lecture/tutorial. Out of 5, best 4 will be chosen

**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.

**9. Academic Honesty and Integrity Policy:** Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

**INSTRUCTOR‑IN‑CHARGE**