BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, Pilani
Pilani Campus
AUGS/ AGSR Division

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

Course No	: MATH F242
Course Title	: OPERATIONS RESEARCH
Instructor-in-Charge	: CHANDRA SHEKHAR

1. Course Description:
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 of system reliability.

2. Scope and Objective of the Course:
Course scope and objective are to cover some topics of operations research in which events occurred/happened at random and involve the concepts of probability in their study. It gives the platform to the student to understand the modeling of the real-life problem and to computed expected performance measures.

3. Text Books:
1. Hamdy A. Taha, "Operations Research: An Introduction", Pearson Education, 9e, 2014.
2. S. Venkateswaran and B. Singh, "Operations Research", EDD Notes, Vol. 3, 1997.

4. Reference Books:
1. F.S. Hillier and G.J. Lieberman, "Introduction to Operations Research", Tata Mcgraw Hill, 8e, 2006.
2. W.L. Winston, "Operations Research, Application, and Algorithms" ., Cengage, 4e, 2003.
3. D.T. Phillips, A. Ravindran, and James J. Solberg., "Operations Research: Principles and Practice", Wiley India 2e, 2007.
4. A.R. Ravindran, "Operations Research: Methodology", CRC Press, 1e, 2011.
5. D. Gross and C.M. Harris, "Fundamentals of Queueing Theory", Wiley India, 3e, 1998.

5. Course Plan:

Module No.	Lecture Session	References	Learning outcomes
1	Lect. 1 Introduction, Historical Development, Impact of O.R., Phases of O.R., Overview of O.R., Modeling Approach	Chapter 1 (T1)	Introduction to Operations Research
	Lect. 2-4 Random variables, Binomial, Poisson, Exponential and Normal Distribution	Chapter 14 (T1)	Review of Basic Probability
2	Lect. 5-16 Definition, Birth and Death process, Role of Exponential Distribution, Generalized Poisson Queueing Models, Specialized Poisson Queues.	Chapter 7 (T2)	Queueing Systems
3	Lect. 17-22 Deterministic and Probabilistic Inventory Models	Chapter 8 (T2)	Inventory Models

4	Lect. 23-27 Introduction, Generation of random variates from different distributions, Simulation of Single-server queueing model, and inventory model.	Chapter 9 (T2)	Simulation Modeling
5	Lect. 28-30 Basic concepts, Hazard rate function, Reliability of the systems, failure time distributions.	Chapter 6 (T2)	Reliability
6	Lect. 31-34 Decision analysis under uncertainty and Game Theory	Chapter 15 (T1)	Decision analysis and Game theory
7	Lect. 35-38 Deterministic Dynamic Programming,	Chapter 12 (T1)	Dynamic Programming
8	Lect. 39-42 Definition, Minimal Spanning tree Algorithm, Shortest route Problem, CPM and PERT	Chapter 6 (T1)	Network Models

6. Evaluation Scheme:

Component	Duration	Weightage (%)	Date & Time	Nature of component (Close Book/ Open Book)
Mid-Semester Test	90 Min.	35		Close book
Comprehensive Examination	180 Min.	45	07/05/2021(FN)	Partial close/open book
Tutorial/Quiz/Assignment		20	To be announced	

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

8. Notices: Notices concerning this course will be displayed on Nalanda and the Department of Mathematics Notice Board.

9. Make-up Policy: Only genuine cases will be entertained. For surprise quizzes, there will be no make-up.

10. Note (if any): Be regular in classes and attempt all evaluation components sincerely.

11. Google Meet Link:

Day	Hour	Google Meet Link
Monday	1 (8.00 AM-8.50 AM)	meet.google.com/cfc-xcsd-oqc
Tuesday, Thursday	4 (11.00 AM-11.50 AM)	meet.google.com/fqz-meom-ajy
Wednesday	10 (5.00 PM-5.50 PM)	meet.google.com/tvw-ntub-rcb

12. Google Drive Link:
https://drive.google.com/drive/folders/1rs5K-z1LBOTkqf_6vFVkikvgyIeoo2lq?usp=sharing

Instructor-in-charge
MATH F242