Course Type	Course Code	Name of the Course	L	T	P	Credits
DP	NMSC510	**Software Lab**	0	0	3	1.5

Course Objective
The course aims to introduce students to quantitative methods and techniques for effective decision–making; model formulation and applications that are used in solving business decision problems.
Learning Outcomes
1. The students will be able to formulate business problems by using mathematical techniques. 2. The course will help to interpret the optimal solutions given by solvers from the management perspective.

Unit No.	Topics to be Covered	Lab Hours	Learning Outcome
1	Experiments on basic Linear programming formulation and solving in Excel. Concepts of sets and formulation using Lingo optimization software. Case study	10	- Helps to understand how to formulate the problem and solve using Excel or Lingo-based software. - Helps to understand how to define sets and write data in Lingo
2	Experiments on Transportation problems, Binary problems- Assignment Problem, Project selection problem. Concept of sensitivity analysis. Case studies	10	- Helps to solve transportation, assignment, and related issues using optimization software
3	Experiments on forecasting problems and calculation of errors using Excel. Experiments on facility location model and supplier selection problem. Experiment on transshipment problem. Capacitated lot-sizing problem. Case studies	12	- Helps to understand how to solve operations management problems.
4	Experiments on goal programming. Experiment on Data Envelopment Analysis. AHP & TOPSIS Case studies	10	- Helps to handle multi-criteria decision-making problems.
	Total	**42**	

Text Books:

1. Optimization Modeling with LINGO by Linus Schrage.
2. Data, Models and Decision making by Albright, Winston and Zappe, Cengage Publication
3. Operations Research by J.K. Sharma, Trinity Publication, 6th Edition