Course Title:	Linear Programming and Game Theory
Course Code:	MTL-3261
Course Coordinator	Dr. Rakesh Kumar
Credits	4-1-0 = 05

Evaluation Scheme   Total 100 Marks

Quiz (Total 20 Marks)				Assignment/Project (Total 20 marks) (Minimum Two Assignments or one Project)		Mid-Term	Major Examination	Total
Quiz I (5 marks	Quiz II (5 marks)	Quiz III (5 marks)	Quiz IV (5 marks)			20 marks) (1 ½ Hour Duration)	(40 marks) (3 Hour Duration	100 Marks

WEEKS	TOPICS TO BE COVERED
Week 1	Introduction: Meaning and nature of Operations Research (OR), History and latest developments of OR
Week 2	Applications of OR, OR models, OR methodology
Week 3	Linear Programming Problem (LPP): Introduction, Mathematical Formulation of LPP, Solutions of LPP
Week 4	Graphical Solution to Linear programming problems, Special cases in graphical method
Week 5	General Form of LPP, Slack and Surplus Variables, Standard form of LPP, Assumptions, Limitations and Applications of LPP
Week 6	Computational procedure of Simplex Method and based numerical examples, Special cases in Simplex procedure
Week 7	Artificial Variables, Big-M method, Two-Phase method
Week 8	Case Studies based on Linear Programming
Week 9	Mathematical Formulation of Transportation Problem, Initial Basic Feasible Solution by North West Corner Rule, Least Cost Method
Week 10	Vogel's Approximation method Assignment problems, Hungarian Algorithm
Week 11 (17th -21st March, 2025)	**Mid-Term**
2nd April, 2025	**Showing of Mid-Term Answer Sheets**
Week 13	Case studies based on transportation and assignment problems

Week 14	Introduction to Game Theory, Maximin-Minimax principle, Saddle point
Week 15	Games with saddle point, Applications of game theory
Week 16	Case studies based on game theory
Week 17 (5th -9th May, 2025)	**Revision Week**
Week 18 (13th – 22nd May, 2025)	**Major Examinations**
29th May, 2025	**Showing of Major Exams Answer Sheets**

Course Outcomes:

After successful completion of the course, the students will be able to

CO1: historical background and developments in Operations Research

CO2: Formulate real world problems as linear programming problems and solve them using various

Techniques

CO3: apply transportation and assignment models in solving real life problems

CO4: understand fundamental concepts of game theory and apply them in industry

Recommended Books:

1. Hadley, G., Linear Programming, Narosa Publishing House, 8th edition.
2. Sharma, S. D., Operations Research, Kedar Nath Ram Nath-Meerut, 10th edition.
3. Swarup, K, Gupta, M. and Manmohan, Operations Research, Sultan Chand and Sons,15th Edition.
4. Taha, H A., Operations Research, Pearson Education, 8th edition.

Tentative Calendar of Quizzes and Assignments. The exact dates and time will be informed in due course of time.

Component	Date
Quiz-I	27th -31st, January 2025
Quiz-II	24th -28th February, 2025
Assignment-I	10th -12th February, 2025
Mid-Term	17-21st March, 2025
Assignment-II/ **Project Submission**	21st – 24th April, 2025
Quiz-III	7th – 11th April, 2025

Quiz-IV	28th April-2nd, May, 2025
Major Exam	13th – 22nd May, 2025

Signature of Course Coordinator :