

Course Title:				Optimization Techniques and Game Theory				
Course Code:				SEL 6225				
Course Coordinator				Dr. Kakali Majumdar				
Credits				4				
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 (5marks)	Quiz II (5marks)	Quiz III (5marks)	Quiz IV (5marks)			20marks) (1 ½ Hour Duration)	(40 marks) (3 Hour Duration)	100 Marks
WEEKS				TOPICS TO BE COVERED				
Week1				Basic Concept of optimization				
Week 2				Relative versus absolute extremum				
Week 3				Economic applications: profit maximization				
Week 4				Economic applications: cost minimization, revenue maximization				
Week 5				Economic applications: demand functions				
Week 6				Economic applications MR-AR Relations				
Week 7				Economic applications MC-AC relations				
Week 8				Maclaurin and Taylor series				
Week 9				Concept of convexity and concavity of function				
Week10				Optimization with equality constraints				
Week11 (17th -21st March, 2025)				Mid-Term				
2nd April, 2025				Showing of Mid-Term Answer Sheets				
Week 13				Rules of the game, the extensive and strategic form of games. solutions: dominant strategy, dominance solvability.				
Week14				Nash equilibrium, applications: Cournot duopoly, Stackelberg model				
Week15				Mixed strategies and their applications: natural monopoly and bankruptcy law, zero-sum games				

Week 16	Playing safe
Week 17 (5 th -9 th May, 2025)	Revision Week
Week18(13 th – 22 nd May, 2025)	Major Examinations
29 th May, 2025	Showing of Major Exams Answer Sheets

Course Outcomes:

CO1: Learn various optimization techniques which is the core of analysis for entire economics discipline.

CO2: Equip with techniques and practical problem solving approach which will be helpful if they do research work

CO3: Understand the cutting-edge theories and model of many branches of economics

Recommended Books:

1. Chiang and Wainwright. Fundamental Methods of Mathematical Economics, McGraw Hill publication.
2. Intriligator M.D. Mathematical Optimization and Economic Theory, Prentice Hall of India.
3. Dixit A. Optimization in Economic Theory, Oxford University Press.

Calendar of Quizzes/Assignment etc. to be provided as per below details and exact dates to be fixed in consultation with other course coordinators to avoid overlap of Quizzes of different courses.

Component	Date
Quiz-I	27 th -31 st , January 2025
Quiz-II	24 th -28 th February, 2025
Assignment-I	10 th -12 th February, 2025
Mid-Term	17-21 st March, 2025
Assignment-II/ Project Submission	21 st – 24 th April, 2025
Quiz-III	7 th – 11 th April, 2025
Quiz-IV	28 th April-2nd, May, 2025
Major Exam	13 th – 22 nd May, 2025

Note:

1. One surprise Quiz may be fixed out of Quiz-II, Quiz-III or Quiz-IV.
2. In case of any deviation in evaluation methodology for courses such as AEC/VAC/SEC shall be mentioned accordingly. Thus, same shall be approved by the next BOS of school if not done earlier.

Signature of Course Coordinator



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