Bachelor of Arts

Syllabus for Economics (English Medium) Semester VI

Implementation year-2021-2022

Old Syllabus	Proposed Syllabus				
Mathematical Economics	Mathematical Economics				
Subject Code	Subject Code				

PAPER TITLE Mathematical Economics	L	Cr	P/T	D (EE)	EE	IE	Т
	60	4	-	2.30	75	25	100
				hrs			

#L=Lectures per week, Cr=Credits, P/T=Practical/Tutorials, D=External Exam Duration, EE=External Examination, IE=Internal Examination, T=Total Marks

Old Syllabus	Proposed Syllabus						
 Old Syllabus Objectives: To equip students with economic concepts and theories interpreted with the help of mathematical tools and techniques to refine verbal logic. Outcomes: Learners can compute equilibrium prices, outputs and profits under different market structures. Evaluate effect of taxation and subsidies on firm's equilibrium price, output and profits. Use mathematical tools in economic analysis. 	 Proposed Syllabus Objectives: To equip students with economic concepts and theories interpreted with the help of mathematical tools and techniques to refine verbal logic. To introduce various mathematical techniques/methods/models related to economic theory like consumer theory, theory of production, product pricing in the decision making by firms in different market structures. To make use of calculus and integration in economic analysis relating consumers and producer's surplus, optimization behavior of firms and consumers and so on. Learning Outcomes: Determine the optimal quantity combination of goods by consumers and constrained output maximization and cost minimization behavior of firms while producing goods 						
	 Learning Outcomes: Determine the optimal quantity combination of goods by consumers and constrained output maximization and cost minimization behavior of firms while producing goods. Learners can compute equilibrium prices, outputs and profits under different market structures. Evaluate effect of taxation and subsidies on firm's 						
	equilibrium price, output and profits.4) Use mathematical tools in economic analysis.						

0	ld Syllabus	Proposed Syllabus								
Unit1	Topic and M Details Old Syllabus	Module	Module Specific Objectives	Content	Weigh tage	Instruct ion Time	Cre dits	Evaluation IE EE		
								Weigh tage	Weig htage	
	No Old Syllabus	Module-1	To equip students with derivatives and its application in economic theories with practical example.	 Derivative and applications in economics: a) Functions and its types, Rules of differentiation with one variable case, b) Maxima and Minima, interpretation of revenue and Sales maximization, cost and profit maximization, c) Elasticity of demand and supply d) Partial derivatives: its rules and total differential. Budget constraint and equilibrium of consumers, producer's constrained cost minimization and output 	25	15	1	5	20	
		Module -2	To understand the integral calculus with economic concepts.	 Integral calculus ; a) Techniques of definite and indefinite integration, b) consumer's surplus and producer's surplus with illustrations using definite integrals, c) Consumption functions, investment functions, cost functions Obtained using integration. 	25	15	1	5	20	
		Module-3	To understand the matrix, Types of Matrix, determinants, Cramer's rule, and input- output	Matrix Algebra and input-output model: a) Rules for addition, subtraction and multiplication of matrices, types of matrices, Transpose of a matrix and its properties Inverse matrix and Idempotent matrix	25	15	1	5	20	

	analysis model.	 b) Determinants: properties, inverse of matrix and solution of linear equations with examples, c) Cramer's rule and its uses to solve equations. d) Solution of input-output analysis in Leontief open input-output model with two sectors and Hawkin-Simion conditions. 			
Moduel-4	To make students familiar with market Equilibrium Model.	 4) Market equilibrium (Activity based module): Shut down point with illustrations, a) Monopoly equilibrium with and without taxation and subsidy, b) Equilibrium under price discrimination and multi-plant monopolist, c) Duopoly Solutions under Cournot 's model and Cartels (Market sharing and joint profit maximizing cartels) 			

Evaluation Scheme:

A. Internal Exams: Total Marks: 25

- 1. Internal Written Test
- 2. Assignments
- 3. Projects
- 4. Case Study
- 5. ICT Presentation
- 6. Group Discussion
- 7. MCQ

B. External Exams: Total Marks: 75

The pattern of the written exam would be as follows:

- 1. Attempt any 5 out of 7 questions
- 2. Question no. 7 short note- any 2 out of 3

References:

A. Essential Reading:

- 1) Hal.R.Varian,(2010)Intermediate micro economics A modern approach, Springre pvt India.
- 2) Walter Nicholson, Christopher snydee, (2017) Micro economics theory-Basic principles and Extention, Cengage learning India pvt Ltd
- 3) Alpha.C.Chiang, Kevin wainwright,(2017)Fundamental Methods of Mathematical Economics, MCGraw Hill Education
- 4) D.Bose(2007) An Introduction Mathematical Economics Himalaya Publishing House.
- 5) Madnani .G.M.K., Mehta B.C.(2008) Mathematics for Environment, S.Chan Publishing housing
- 6) Chiang, Alpha C.(2005) Fundamental Methods of Mathematical Economics, McGraw Hill
- 7) Rosser, Mike, (2016) Basic Mathematics for Economists, by Routledge, Taylor & Francis Group
- 8) R G D Allen, (2008) Mathematical Economics
- 9) S.C Patra,(2010) Mathematical Techniques for Economic Analysis- Himalaya Publishing House
- 10) Apostol, T. (1991): Calculus, Volumes 1 and 2, Wiley.
- 11) Simmons, G. and Krantz, S. (2006): Differential Equations, McGraw Hill.
- 12) Monga, G. S. (1972), Mathematics and Statistics for Economists, Vikas Publishing House, New Delhi.

Additional Reading:

- 1) MATHEMATICS FOR ECONOMISTS(2018) Dr. Dilfraz Singh By Lovely University
- 2) Fuente Angel de la (2009) Mathematical Methods and Models for Economists Cambridge University Press
- 3) Michael Carter(2001) Foundations of mathematical economics MIT press- London
- 4) Econometrics Journal
- 5) Maths application in Economics