

### 3. MICROECONOMICS

**Course Objective:** This course is to learn about basic concepts, principles and theories in Microeconomic to understand the economic behavior of an individual person and firm.

**Course Learning Outcomes:**

After studying this course, the student shall be able to achieve the following outcomes:

**CO1:** Explain what is an economy, economics and differentiate between micro and macro economics

**CO2:** Analyses the demand of a product and estimate elasticity

**CO3:** Estimate production function and understand its application

**CO4:** Analyze functioning of different markets and their differentiations

**CO5:** Examine the determination of rent, wage, interest and profit

**Unit-1: Introduction to Economics**

- Economic Activities and Economic System; Definition, Scope and Importance of Economics
- Fundamental problems of economics: Scarcity and Choice, Production Possibilities Curve
- Meaning and Scope of Microeconomics; Differences between Micro and Macro Economics
- Principles of Microeconomics: Equilibrium, Optimization, Welfare ; Methodology in Economics : Positive and Normative

**Unit -2: Demand and Consumption**

- Demand: Meaning, Types and Factors; Law of Demand
- Elasticity of Demand: Meaning, Price, Income and Cross Elasticities
- Utility: Meaning, Types, Importance; Marginal Rate of Substitution (MRS), DMRS
- Indifference Curves (IC): Concept, Properties; Budget Line; Consumer Equilibrium under IC

**Unit -3: Production and Supply**

- Firm: Concept and Objectives; Production and Factors of Production; Concepts of Production, Cost and Revenue: Total, Average, Marginal
- Production Function: Meaning and Types; Cobb- Douglas Production Function
- Law of Variable Proportions; Laws of Returns to Scale
- Supply: Meaning, Factors, Law of Supply, Elasticity of Supply

#### **Unit-4: Markets**

- Market: Concept and Classification; Perfect Competition: Characteristics, Equilibrium of Firm and Industry
- Monopoly: Characteristics, Equilibrium, Price Discrimination
- Monopolistic Competition: Characteristics, Equilibrium, Selling Costs
- Oligopoly: Characteristics, Types, Kinked Demand Curve Model

#### **Unit - 5: Distribution**

- Distribution: Meaning, types and importance
- Rent: Ricardian Theory of Rent, Marshallian Quasi Rent
- Theories of Wage: Subsistence Theory, Modern Theory
- Theories of Interest: Classical Theory, Loanable Funds Theory
- Theories of Profit: Risk and Uncertainty Theory, Innovations Theory

#### **References:**

1. Microeconomic Analysis, Bilingual Textbook, APSCHE
2. H. L. Ahuja, Advanced Economic Theory, S. Chand, 2004
3. A. Koutsoyiannis, Modern Microeconomics – Macmillan, London.
4. P. N. Chopra, Principles of Economics, Kalyani Publishers, Ludhiana, 2018.
5. Telugu Academy Publications on Microeconomics
6. Microeconomics, Dr. Br. Ambedkar Open University Material
7. Microeconomics, IGNOU Material

#### **Suggested Activities:**

Unit-1: Group discussion on Identifying Surrounding Economic Activities

Unit-2: Project on Demand Analysis of any Good/Services and make presentation

Unit-3: Assignment on any production function or concepts of production

Unit-4: Field visit to any market and submission of a report

Unit-5: Seminar on distribution theories

## 4. MATHEMATICAL METHODS FOR ECONOMICS

**Course Objective:** This course is to provide basic understanding about mathematical methods relevant to economics and skills to apply them in understanding various economic issues.

### Course Learning Outcomes:

After studying this course, the student shall be able to achieve the following outcomes:

- CO1:** Explain the basics of sets, functions and their graphical representation
- CO2:** Learn the rules of differentiation and apply the same to economic problems
- CO3:** Learn and use maxima and minima to Optimization problems in economics
- CO4:** Apply rules of integration to estimate the size of consumers' and producers' surplus
- CO5:** Solve the economic problems through the application of the Matrix Theory

### Unit 1: Sets & Functions

- Role of Mathematical Methods in Economics
- Sets: Types, Operations
- Functions: Meaning, Types, Graphical Representation, Applications in Economics.

### Unit 2: Differential Calculus

- Limits of Functions; Continuity and Differentiability of a Function
- Derivative of a Function; Rules of Differentiation
- First and Second Derivatives and their Interpretations; Partial Derivatives
- Applications of Derivatives in Economics

### Unit 3: Optimization Problems and their Applications

- Concept of Optimization in mathematics; Problems of Maxima and Minima
- Unconstrained & Constrained Optimization
- The Method of Lagrange Multipliers
- Some Applications of Optimization in Economics

### Unit 4: Integrations and Linear Programming

- Concept of integration; Simple Rules of Integration
- Application of Integrations in Economics
- Linear Programming: Basic Concept, Formulation of Problem; Feasible, Basic and Optimal Solutions
- Applications of Linear Programming in Economics.

### Unit 5: Matrices and Determinants and Applications in Economics

- Matrix: Concept, Types; Matrix Operations: Addition, Multiplication

- Determinants, Inverse of a Matrix
- Solution to the System of Simultaneous Equations, Cramer's Rule
- Some Applications of Matrix Theory in Economics

### References:

1. Alien, R.G.D. (1974), *Mathematical Analysis for Economists*, Macmillan Press and ELBS, London.
2. Chiang, A.C. (1986), *Fundamental Methods of Mathematical Economics*, McGraw Hill, New York.
3. Yamane, Taro (1975), *Mathematics for Economists*, Prentice Hall of India New Delhi.
4. Heijdra, B.J. and V.P. Fredericck (2001), *Foundations of Modern Macroeconomics*, Oxford University Press, New Delhi.
5. Knut Sydsaeter and Peter Hammond (2008), *Mathematics for Economic Analysis*. Pearson education.
6. Open Source Online Materials & Videos: IGNOU, e-PG Pathasala, SWAYM, Khan Academy etc.

### Suggested Activities:

Unit-1: Assignments on solving sets and modeling various functions

Unit-2: Exercises on solving differential equation and their application in economics

Unit-3: Board Presentation by students in solving the optimization problems related to economics

Unit-4: Task Based Learning (TBL) for solving and application of the liner program models with economic examples

Unit-5: Group Projects on solving matrix problems, submit report and make presentation.