Semester I

Undergraduate Certificate in Economics

Discipline Specific Course (DSC)- Basics of Microeconomics with Mathematical Techniques

No. of Hours-60

CREDIT DISTRIBUTION, ELIGIBILITY, PRE-REQUISITES OF THE COURSE

Course Title	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisites of the course (if any)
		Lecture	Tutorial	Practical/Practice		
DSC: Basics of Microeconomics with Mathematical Techniques	4	3	1	0	Passed class XII	Nil

Undergraduate Certificate in Economics		
Programme : Undergraduate Certificate in Economics	Year 1	Semester 1 Paper I
Subject : Economics		
Course Code : ECODSC101	Course Title : Basics of Microeconomics with Mathematical Techniques	

Course Outcomes: The course will help students to:

- Overview of economics, including definitions, equilibrium types, economic analysis, and the role of mathematics in economic theory.
- Examination of demand theory through utility analysis, elasticity, consumer surplus, and the application of linear equations in demand and supply.
- Analysis of production theory, including returns to factors, production possibility curves, and the application of calculus in cost and revenue functions.
- Exploration of market types, classical theories of wages, rent, interest, profit, and the use of mathematical techniques for profit maximization and equilibrium calculations.

Credits : 4 Credits | **Discipline Specific Course**

Unit	Topic	No. of Hours
I	Definition, Nature, Scope and Methods of Economics. Production Possibility Curve and Opportunity Cost. **Equilibrium**: Stable, Unstable & Neutral, Short-Term & Long-Term, Particular & General, Static & Dynamic, Unique and Multiple. **Economic Analysis:** Micro & Macro Analysis. Static & Dynamic Analysis. **Mathematical Techniques in Economics**: Nature and Scope of Mathematical Economics. Mathematical Economics Vs Literary Economics. Mathematical Economics Vs Econometrics. Role of Mathematical Techniques in Economic Analysis.	13
II	**Theory of Demand:** Utility Analysis of Demand. (Cardinal & Ordinal Approach) Indifference Curve Analysis. Consumer's Equilibrium. Law of	17

	Demand, Giffen Goods and Inferior Goods. Concept of Elasticity of Demand & Consumer's Surplus. **Economic Applications using Mathematics- Functional Relationship**: Graphical Representation of Functions. **Equation of Straight Lines:** Understanding Application of Straight Lines in Economics. **Use of Linear Equations:** Linear Demand & Supply Law, Market Equilibrium. **Functions**: Demand and Supply. Equilibrium. **Application of Differentiation**: Elasticity of Demand, Use of Differential and Integral Calculus in understanding the concepts of Total (TU) and Marginal Utility (MU) and their relation. **Maxima & Minima**: Calculation of Consumer Surplus.	
III	**Theory of Production:** Returns to a Variable Factor. **Production Function:** Isoquants, Fixed Proportions and Variable Proportions, Returns to Scale. Law of Diminishing Marginal Returns. Concept of Cost and Revenue. **Economic Application using Mathematics**: **Use of Functions** in Production, Cost and Revenue. **Use of Differential and Integral Calculus** in understanding the concepts of total, marginal, and average cost and revenue.	15
IV	**Introduction to Different Types of Markets in Economics:** Perfect Competition, Monopoly and Monopolistic Competition. Classical Theory of Wage, Rent, Interest & Profit. Introduction to Welfare Economics. **Economic Application using Mathematics**: Calculation of Profit Maximisation for Perfect Competition & Monopoly Market using Maxima-Minima, Use of Definite Integration in different markets to find Equilibrium Price and Equilibrium Quantity.	15

Essential Readings:

1. Hal R. Varian, Intermediate Microeconomics, Springer Publication.
2. Agarwal, D.R., Elementary Mathematics and Statistics for Economists, Vrinda Publication Delhi
3. Nicholson, W. and Synder C., Basic Principles in Microeconomics, Cengage Learning
4. Pindyck, R and Rubinfeld D., Microeconomics, Perason
5. Bose, D. An Introduction to Mathematical Economics. Himalaya Publishing House.
6. लोहनी, जीतेन्द्र कुमार एवं पदम् इस बिष्ट, अर्थशात्र में गणितीय एवं सांख्यिकीय विधियां, कुणाल बुक्स, नई दिल्ली

Recommended/Additional Readings:

1. Koutsoyiannis, A., Modern Microeconomics, Macmillan, London.
2. Roy Choudhary, K., Modern Micro Economics, Theory and Application, Vols. I, II & III, Dominant Publishers and Distributors, New Delhi.
3. लाल, एस. एन. एवं एस. के. चतुर्वेदी, आर्थिक विश्लेषण की तकनीक, शिव पब्लिशिंग हाउस, इलाहाबाद।
4. गुप्ता, के एल, रविकांत अग्गरवाल एवं प्रवीण जैन. अर्थशास्त्र ली आधारभूत परिमाणात्मक विधियां, नवनीत प्रकाशन, आगरा.

Suggested online link:

www.ignou
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www.inflibnet