

Course Code: ECNHC202

Nature of the Course: Core

**Full marks: 100 (Internal Assessment-20 +
End Term-80)**

Course Title: Mathematical Methods for Economics - II

Total Credit Assigned: 6

Distribution of Credit: 5 Lecture + 1 Tutorial

Course Description:

This course is the second part of a compulsory two-course sequence. This part is to be taught in Semester II following the first part in Semester I. The objective of this sequence is to transmit the body of basic mathematics that enables the study of economic theory at the undergraduate level, specifically the courses on microeconomic theory, macroeconomic theory, statistics and econometrics set out in this Syllabus. In this course, particular economic models are not the ends, but the means for illustrating the method of applying mathematical techniques to economic theory in general.

Units	No of Lecture Hours	No of Tutorial Hours	Marks
1. Difference equation: First order Difference equation and its Economic Applications.	10	2	12
2. Linear Algebra (Matrices and Determinants): Systems of linear equations: properties of their solution sets; Matrices-elementary operations: matrix addition, product, rank of a matrix, determinants and their properties, inverse of a matrix, Application of Cramer's rule for solution of a system of linear equations.	15	3	16
3. Derivatives of Functions of several variables: Partial and Total differentiation and economic applications, Indifference curve analysis; Expansion Path, Production Function Analysis- Homogeneous Functions and Euler's Theorem; Cobb-Douglas Production Function and its Properties; CES Production Function and its properties.	20	4	20
4. Unconstrained optimization : Unconstrained optimization with one variable and Economic Applications; Unconstrained optimization with more than one variable and Economic Applications- Discriminating Monopoly, multiproduct monopoly.	15	3	16
5. Constrained optimization with equality constraints: Lagrange characterization using calculus; applications- consumer's equilibrium and producer's equilibrium.	15	3	16
Total	75	15	80

Reading list:

1. K. Sydsaeter and P. Hammond, *Mathematics for Economic Analysis*, Pearson Educational Asia: Delhi, 2002.
2. Chiang, A.C.: *Fundamental Methods of Mathematical Economics*, Fourth edition, McGraw Hill 2005.
3. Hoy, M., J. Livernois, C. McKena, R. Rees, and T. Stengos: *Mathematics for Economics*, PHI Publishers.
4. Barua, Srinath: *Basic Mathematics and Its Applications in Economics*, Second Edition, Laxmi Publications 2013.

N.B.:

We will concentrate on Unit II now.

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24.05.2021