M.A. ECONOMICS (CCSS) - 2019 Admission Onwards

Semester – I

Core Course – III

ECO 1C O3 – Mathematics for Economics

Total Hours: 90

Lecture Hours: 70

Seminar Hours: 20

(Credit 4)

Module I : Linear Algebra

Different types of functions and its graphs, Constant Linear, Quadratic, Cubic, Polynomial, Exponential and logarithmic functions. Applications of linear functions in Economics- Vectors and Matrices, determinants, solution of a system of equations - Inverse method and Crammer' s rule – Rank of a matrix – characteristic equations and characteristic roots and vectors.

Module II : Differential Calculus

Functions, limit of a function, continuity of a function, Derivative of a function - Rules of Differentiation, Higher order derivatives, differentiation of logarithmic functions, exponential functions and implicit functions – Application of Derivatives – Meaning of a Derivative – rate of change – slope of a curve – Marginal concepts related to demand, supply, cost, revenue and production functions. Maxima and minima – Economic applications.

Module III: Functions of Several Variables

Functions of several variables - Partial differentiation – Optimisation of Multivariable

functions – constrained optimization with Lagrangian multipliers – Consumers and producers equilibrium using constrained optimization Differentials – Total and Partial derivatives – Total derivatives – Rules of integration – Definite integral, area under a curve –estimation of producers and consumers surplus.

Module IV: Differential and Difference Equations

First order Differential equations – Definitions and concepts, general formula for Differential equations – Economic applications – Differential equations for limited and unlimited growth - First order Difference equations – Solution of first order difference equations - General formula for First order Linear Difference equations, applications - stability conditions, Cobb Web model.

Module V : Financial Mathematics

Arithmetic and geometric sequence and series - Simple interest, compound

interest and annual percentage rates – Depreciation – Net present value and internal rate of return – Annuities, debit repayments, sinking funds – The relationship between interest rates and the price of bonds

Suggested readings

· TERESA BRADLEY and PAUL PATTON Essential Mathematics for Economics and Business, Revised by Teresa Bradley, Wiley student Edition

· Taro Yamane: Statistics - An Introductory analysis , Harper & Row, Edition 3, 1973

· Hoel PG : Introduction to mathematical Statistics , John Wiley & Sons, Edition 4, 1971

· Allen, RGD Mathematical Analysis for economics, McMIllan

· Tulsian, P.C and Vishal Pandey: Quantitative Techniques, Pearson Education, New Delhi

· Gupta, S.P.: Statistical Methods, Sulthan Chand and Sons, New Delhi.

· Hooda R.P. Statistics for Business and Economics , Mac Million, New Delhi

· Chiang, Alpha C: Fundamental methods of Mathematical Economics , 2nd Ed. – Inter National Student Edition, Mc Grawhill

· Dowling, Edward T: Introduction to Mathematical Economics , Third Edition, Schaumn' s outlines, Tata Mc Grawhill Publishing Co. Ltd, New Delhi.

· Sreenath Baruah: Basic Mathematics and its Applications in Economics , Mc Millian India Ltd.

· Joseph K.X, Quantitative Techniques, CUCCS Ltd, Calicut University.

MA ECONOMICS (CCSS) 2019 ADMISSION ONWARDS

Module I: Probability and Probability Distributions

Concepts – Set theory, Permutations and Combinations, Definitions of Probability – classical, empirical and axiomatic approaches – Addition and multiplication laws, conditional probability – Bay' s theorem, Random variables – probability distribution

– Mathematical expectation – moments – Two random variables, joint, Marginal and conditional probability functions, expectation of two random variables.

Module II : Discrete and Continuous Probability Distribution

Probability Distributions – Discrete Probability Distributions, Binomial, Poisson, Uniform – simple applications. Continuous probability distributions – Normal,

Lognormal and Exponential Distributions (Derivations are not expected), concept of law of large numbers and Central limit theorem.

Module III: Theory of Estimation

Statistical Inference, Concept of population, sample – Sampling distributions – Standard error – Distributions of sample mean, Sample variance – chi square Student' s t, and F distributions – Small and large sample properties of Z, t and chi. Square and F – Estimations of populations parameters – point and Interval estimation – Fisher' s properties of estimators – Confidence interval for Mean and Proportion and variance – Methods of estimation – Methods of least squares, Method of maximum likelihood.

Module IV: Testing of Hypothesis

Parametric and Non-parametric tests of Hypothesis, Testing of hypothesis – simple and composite hypothesis – Null and alternative hypothesis – Type I and Type II error, Critical region – Level of significance, Power of a test – Test procedure – Test of significance in respect of Mean, Proportion, Variance and Correlation coefficient and their differences – Chi Square test of goodness of fit, and test for independence of attributes. Non parametric tests, sign test, Wilcoxon – Mann Whitney U Test, Signed rank test, Kruskal Wallis test, Wald-Wolfowitz test.

Module V: Analysis of Variance

Analysis of Variance – Meaning, assumptions – One way classification and Two way classifications, simple applications.

Semester II

Core Course – VII

ECO 2C 07 – Statistics for Economics

Total Hours: 90

Lecture Hours: 70

Seminar Hours:

20

(Credit 4)

Suggested Readings:

· Taro Yamane, Statistics: An Introductory analysis , Harper & Row, Edition 3, 1973

· Hoel PG: Introduction to mathematical Statistics , John Wiley & Sons, Edition 4, 1971

· Agarwal YP: Statistical Methods: Concepts, Application and Computation, Sterling Publishers 1986

· Sidney Siegal, N. John Castellan: Non parametric Statistics for ecentra Sciences, Edition 2, 1988, Mc Graw-Hill
· Tulsian, P.C and Vishal Pandey: Quantitative Techniques, Pearson Education, New Delhi
· S.P. Gupta: Statistical Methods, Sulthanchand and sons, New Delhi.
· Hooda R.P: Statistics for Business and Economics , Mac Million, New Delhi
· Chiang Alpha C: Fundamental methods of Mathematical Economics , 2nd Ed. – Inter National Student Edition, Mc Grawhill
· Dowling Edward T: Introduction to Mathematical Economics, Third Edition, Shaumn' s outlines, Tata Mc Grawhill Publishing Co. Ltd, New Delhi.
· Sreenath Baruah: Basic Mathematics and its applications in Economics, Mc Millian India Ltd.
· Joseph K.X, Quantitative Techniques, CUCCS Ltd, Calicut University.