Core Course-IV
MA ECONOMICS (CUCSS)
I SEMESTER
PAPER-IV- QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS-I
Credit 4

(2015 onwards)

Total Hours: 90
Lecture Hours: 70
Seminar Hours: 20

Module I Matrices & Determinants

Types of Matrices- Operations of matrices- Determinants-Properties of determinants-Minors and cofactors- Adjoint of a matrix- Inverse of a matrix-Rank of a matrix- Solution of a system of linear equations using matrices- Crammer's rule- Characteristic equations-Characteristic roots- Applications in economics.

Module II: Applications of Differential Calculus

Applications-Rate of change and the derivative-Derivative and slope of a curve-Rules of differentiation involving functions of different variables-Partial and total differentiation-Differentials and derivative-Differentials and point elasticity-Total derivatives-Economic applications of partial and total differentiation and differentials.

Module III: Optimisation and Integration

Unconstrained maxima and minima with single explanatory variables and its applications-Optimisation with equality constraints-Lagrange multiplier method-Methods of integration-Integration by parts-Simple applications.

Module IV: Probability Theory

Concept-Permutations Combinations- Definition classical, empirical-Axiomatic approaches-Addition and multiplication laws- Conditional probability- Bayesian probability - Baye's theorem random variable- Probability functions-Mathematical expectation-Moments.

References

1. Taro Yamane (1973): Statistics: An Introductory Analysis- Harper & Row.
2. Hoel PG (1971): Introduction to Mathematical Statistics- John Wiley & Sons.
3. RGD Allen: Mathematical Analysis for Economics.
4. Simpson & Kafka: Basic Statistics.
5. Dowling E.T (1992): Introduction to Mathematical Economics- Schaum's Outline Series, McGraw Hill, New York.
6. Tulsian P.C and Vishal Pandey: Quantitative Techniques- Pearson Education, New Delhi.
7. S.P. Gupta: Statistical Methods- S Chand and Sons, New Delhi.
8. Hooda R.P: Statistics for Business and Economics- Macmillan, New Delhi.
9. Alpha C Chiang: Fundamental Methods of Mathematical Economics- 2nd Ed.-Inter National Student Edition, McGraw-Hill.
10. Sreenath Baruah: Basic Mathematics and its Applications in Economics- MacMillan India.

Core Course-VIII
MA ECONOMICS (CUCSS)
II SEMESTER
PAPER-IV- QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS-II
Credit 4

(2015 admn onwards)

Total Hours: 90
Lecture Hours: 70
Seminar Hours: 20

Module I: Probability Distributions

Discrete distribution- Distribution function- Properties of distribution functions- Mathematical expectation-Binomial distribution- Mean of binomial distribution- Variance of binomial distribution-Skewness and kurtosis of binomial distribution- Fitting of binomial distribution- Poisson distribution- Mean of Poisson distribution- Variance of Poisson distribution- Fitting of Poisson distribution (concept and applications only).

Module II: Continuous and Normal Distributions

Concept of continuous distribution- Normal distribution- Properties of normal distribution-Importance of normal distribution- Area under normal distribution- Problems in normal distribution using normal distribution tables- Lognormal distribution (concept and applications only).

Module III: Sampling Distributions

Sample-Theory of sampling distributions-Standard error- Sampling distribution of Sample mean- Chi square distribution-Student t distribution-F distribution- Central limit theorem.

Module IV: Estimation Theory

Point estimation- Properties of point estimation- Interval estimation- Confidence intervals- Test of hypothesis- Null and alternative hypothesis-Type I and Type II errors- Critical region- Level of significance- Power of a test- Critical value- Neymann Pearson Lemma.

Module V: Testing

Testing Mean of a population- Testing equality of means of two populations- Test of proportion of success of a population- Testing of equality of two population proportions- t test for the population mean- t test for the equality of two population means -Paired t test-χ^2 test for independence and goodness of fit-ANOVA.

References

1. Taro Yamane: Statistics: An Introduction.
2. Hoel PG: Introduction to Mathematical Statistics.
3. YP Agarwal: Basic Statistics, Statistics for Behavior Sciences.
4. K X Joseph: Quantitative Techniques.
5. Tulsian P.C and Vishal Pandey: Quantitative Techniques- Pearson Education, New Delhi.
6. S.P. Gupta: Statistical Methods- S Chand and Sons, New Delhi.
7. Hooda R.P: Statistics for Business and Economics- Macmillan, New Delhi.
8. Simpson & Kafka: Basic Statistics.