B. Sc. (Honours) Semester- I

STAT-GE-1: STATISTICAL METHODS

Credits 6

Theory: Final Examination: 80 marks; Internal Assessment: 20 marks

Practical: Final Examination: 30 marks, Internal Assessment: 10 marks, VIVA-VOCE: 10 marks

Note for Theory: - The theory question paper will consist of 9 questions, two from each of four units and one compulsory question. A candidate will be required to attempt five questions selecting one from each section and the first compulsory question in three hours duration. The compulsory question shall contain short answer type questions covering the whole syllabus.

Note for Practical: The practical question paper will consist of 5 questions. The students will be required to attempt three questions.

UNIT I

Introduction: Definition and scope of Statistics, concepts of statistical population and sample.

Scales of measurement - nominal, ordinal, interval and ratio. Variables and attributes, Diagrammatical Representation of Data, Summarization of Data: Frequency Distribution and Graphical Presentation.

UNIT II

Measures of Central Tendency: mathematical and positional. Measures of Dispersion: range, quartile deviation, mean deviation, standard deviation, coefficient of variation, moments, measures of skewness and kurtosis Box-whiskey Plot.

UNIT III

Bivariate data: Definition, scatter diagram, simple correlation, rank correlation.

Partial and Multiple Correlation Coefficients. Only definition and its applications (No derivation)

Fitting of linear and quadratic regression equations using principle of least squares

UNIT IV

Theory of attributes and consistency of data, independence and association of attributes, measures of association and contingency for 2 x 2 and r x s contingency tables.

SUGGESTED READINGS:


B. Sc. (Honours) Semester- II

STAT-GE-2: INTRODUCTORY PROBABILITY

Credits 6

Theory: Final Examination: 80 marks; Internal Assessment: 20 marks
Practical: Final Examination: 30 marks, Internal Assessment: 10 marks, VIVA –VOCE: 10 marks

Note for Theory: - The theory question paper will consist of 9 questions, two from each of four units and one compulsory question. A candidate will be required to attempt five questions selecting one from each section and the first compulsory question in three hours duration. The compulsory question shall contain short answer type questions covering the whole syllabus.

Note for Practical: The practical question paper will consist of 5 questions. The students will be required to attempt three questions.

UNIT I

Probability: Introduction, random experiments, sample space, events independent, dependent, mutually exclusive, exhaustive, equally likely and algebra of events.

Classical, statistical, and axiomatic approaches to probability, Conditional Probability, laws of addition and multiplication, theorem of total probability, Bayes’ theorem and its applications, Sensitivity specificity, Predictive values positive, Predictive value Negative.

UNIT II

Random Variables: Discrete and continuous random variables, Probability mass function (p.m.f.), Probability density function (p.d.f.), Cumulative distribution function (c.d.f.) Illustrations of random variables and their properties. Expectation, variance, moments and moment generating function.

UNIT III

Standard probability distributions: Binomial, Poisson, geometric, negative binomial, hyper geometric, uniform, normal, exponential, beta, gamma and their applications. Fitting of Binomial, Poisson and Normal Distributions

UNIT IV


SUGGESTED READINGS:

B. Sc. (Honours) Semester- III

STAT-GE-3: BASICS OF STATISTICAL INFERENCE

Credits 6

Theory: Final Examination: 80 marks; Internal Assessment: 20 marks
Practical: Final Examination: 30 marks, Internal Assessment: 10 marks, VIVA –VOCE: 10 marks

Note for Theory: - The theory question paper will consist of nine questions, two from each of four units and one compulsory question. A candidate will be required to attempt five questions selecting one from each section including the first compulsory question in three hours duration. The compulsory question shall contain short answer type questions covering the whole syllabus.

Note for Practical: The practical question paper will consist of 5 questions. The students will be required to attempt three questions.

UNIT I

Estimation of population means.

The basic idea of Test of significance, Null and alternative hypotheses. Type I& Type II errors, level of significance, concept of p-value. Tests of hypotheses and confidence intervals for the parameters of a normal distribution (one and two sample problems), Paired t-test.

UNIT II

Tests of proportions, tests of association and goodness-of-fit using Chi-square test, Yates’ correction.

Test of significance for correlation coefficient. Fisher’s z –transformation for testing the hypothetical value of correlation coefficient.

UNIT III

Analysis of variance, one-way and two-way classifications. Brief exposure of three basic principles of design of experiments, treatment, plot and block. Analysis of completely randomized design, randomized complete block design.

UNIT IV

Basic Idea of Non-parametric tests, sign test for median, Paired sign test, Wilcoxon signed rank test for symmetry, Wilcoxon two-sample test.

SUGGESTED READINGS:


B. Sc. (Honours) Semester- IV

STAT-GE-4: APPLIED STATISTICS
Credits 6
Theory: Final Examination: 80 marks; Internal Assessment: 20 marks
Practical: Final Examination: 30 marks; Internal Assessment: 10 marks, VIVA –VOCE: 10 marks

Note for Theory:- The theory question paper will consist of 9 questions, two from each of four units and one compulsory question. A candidate will be required to attempt five questions selecting one from each section and the first compulsory question in three hours duration. The compulsory question shall contain short answer type questions covering the whole syllabus.

Note for Practical: The practical question paper will consist of 5 questions. The students will be required to attempt three questions.

UNIT I


UNIT II

Index numbers, definition, Methods to construct price, quantity and value index numbers. Problems involved in the construction of index numbers, use of averages, simple aggregative and weighted average methods. Laspeyre’s, Paasche’s, Edgeworth - Marshall and Fisher’s index numbers. Time and factor reversal tests of index numbers. Chain Base index numbers, Cost of living index number, interpretation and applications of index numbers.

UNIT III


UNIT IV

Demographic Methods: Measurement of population rates of vital events. Measurement of mortality: Crude Death Rate (CDR), Standardised Death Rate (SDR) (w.r.t. Age and sex), IMR.
Measurement of fertility and reproduction: Crude Birth Rate (CBR), Gross Fertility Rate (GFR) and Total fertility rate (TFR).
Life (mortality) tables: definition of its main functions and uses.

SUGGESTED READINGS:


