



BAGALKOT UNIVERSITY, JAMKHANDI

BACHELOR OF ARTS PROGRAMME

THE COURSE STRUCTURE & SYLLABUS

FOR

APPLIED STATISTICS

I and II Semester

w.e.f.

Academic Year 2024-25 and Onwards

Under

STATE EDUCATION POLICY (SEP)

B.A Applied Statistics(UG) Course Structure (S.E.P.)

| Sem | Course Code | Title of the Paper | Teaching Hrs | Credits | Marks | | | Duration of Exam |
|------------|--------------------|--|---------------------|----------------|-----------------|-----------|--------------|-------------------------|
| | | | | | Sem Exam | IA | Total | |
| I | DSC1A | Basics Statistics | 5hrs | 5 | 80 | 20 | 100 | 3 hrs |
| II | DSC1B | Bivariate Analysis and Economic Statistics | 5hrs | 5 | 80 | 20 | 100 | 3 hrs |

Regulations and Syllabus
For
APPLIED STATISTICS
In
Three Year B.A. Course(SEP 2024)

Regulation and Scheme of Instructions:

Regulations for governing three years semesterized Bachelor degree Programme of Bagalkot University, Jamkhandi in Applied Statistics optional subject with effect from academic year 2024-2025.

I. Goals and Objectives:

The following aims have been kept in view while designing the syllabus of Bachelor's programme (BA)in Applied statistics as one of the optional statistics.

1. To create an aptitude and bring statistical awareness among the students.
2. To train promising learners to teach Applied Statistics effectively at various level in the educational institutions.
3. To provide adequate Statistical knowledge and skills as required for the competitive examination.
4. To enrich and enhance analytical skill through Statistical techniques.
5. To make the subject student friendly, socially relevant and to cultivate research culture among the students.

II. Admission criteria:

Any candidate who have passed PUC/10+2 with any subjects are eligible to choose Applied Statistics as one of the optional subjects at the under graduate course. The other rules for admission are as per the university and government notifications from time to time.

III. Medium of Instruction:

The medium of instruction will be in English, however, the students are allowed to opt Kannada medium also.

IV. Attendance:

A minimum of 75% of attendance in each semester is compulsory.

V. Scheme of Instruction:

1. The M.A/M.Sc./M. Stat. Master degree holders in Statistics can only teach Applied Statistics optional subject at UG level.
2. Applied Statistics is an optional subject at UG level which consists of six semesters. There will be one theory paper in I and II semester of 100 marks. The duration of teaching hours will be 5 hours per week in each paper.

VI. General Pattern of Theory Question Paper :

1. Theory course shall carry 100 marks of which 80 marks allotted for semester end examination and 20 marks for internal assessment.
2. The semester end examination will be conducted by the university which will be of three hours duration and maximum 80 marks. The minimum passing marks in the examination is 40 percent.
3. There shall be three sections in every question paper-A,B and C. Section A shall have 12 questions of each 2 marks and candidates have to solve 10 questions ($10 \times 2 = 20$ marks). Section B shall have 6 questions of each 5 marks and the candidate has to solve 6 questions only ($4 \times 5 = 20$ marks). Section C shall have 6 questions of each 10 marks and the candidate has to solve 4 questions as per instructions ($4 \times 10 = 40$ marks).

COURSE: DSC1A(BA-ISemester)

BASIC STATISTICS

Course Outcomes (COs)

At the end of the course the student should be able to:

1. Get the knowledge of Statistics and its applications in various fields.
2. To present the numerical data through diagrams and graphs.
3. Get knowledge of various types of data, their organization and evaluation of summary measures such as measures of central tendency and dispersion.
4. To understand skewness and kurtosis.

COURSE: DSC1A(BA-ISemester)

BASIC STATISTICS

MAX.MARKS: 100(SEC-80+ IA– 20)

Credits:5

Teaching Hours: 60 Hours

Workload: 05Hrs/ Week

Unit-I. Introduction to Statistics and Basic Concepts:

Meaning, origin, definition, functions and limitations of Statistics, applications in other subjects. Primary and secondary data. Methods of collection of primary data with merits and demerits. Meaning of questionnaire and schedule. Sources of secondary data. Classification meaning and objectives of classifications. Types of classifications- Chronological, Geographical, Qualitative and Quantitative classifications. Explanation with examples, Explanation of range, class, class limits, class intervals, width of class interval, open-end classes, inclusive and exclusive classes. Formation of discrete and continuous frequency distributions.

Tabulation: Meaning and objectives and rules of tabulation, format of a statistical table and brief explanation of parts of table. Types of table, preparation of tables of blank table and tables with numerical information. **12 Hours**

Unit-II. Diagrammatic and Graphical Representation of Data:

Diagrams : Meaning, importance of diagrams and general rules of construction of diagrams. Types of Diagrams –simple, multiple, component, percentage bar diagrams and pie diagram. Problems on the construction of diagrams.

Graphs: Types of Graphs–explanation of construction of histogram and examples on obtaining mode from histogram. Method of construction of frequency Polygon and frequency curve. Ogives - method of construction of Ogives and problems on obtaining the value of median and quartiles from less than Ogive. Difference between diagrams and graphs. **12 Hours**

Unit-III. Measures of Central Tendency:

Meaning of central tendency and essentials of a good measure of central tendency. Types of measures of central tendency: Arithmetic mean, Mode, Median, Geometric mean and Harmonic mean- definition, merits and demerits. Properties of arithmetic mean. Problems on both grouped and ungrouped data on all the measures. Empirical relation between mean, median and mode.

Partition values-definition and types of partition values, meaning of quartiles, deciles and percentiles. Problems on Quartiles for grouped and ungrouped data only. **12 Hours**

Unit-IV. Measures of Dispersion:

Meaning and objectives of measures of dispersion. Essentials of a good measure of dispersion, absolute and relative measures of dispersion. Range –definition, absolute and relative measures formulae. Examples on ungrouped data, Merits and demerits. Quartile Deviation definition, absolute and relative measures formulae. Merits and demerits Problems on grouped and ungrouped data. Mean Deviation definition, absolute and relative formulae, merits & demerits, simple problems on grouped and ungrouped data, Standard Deviation- definition and merits and demerits, Coefficient of Variation, Simple problems on grouped and ungrouped data on standard deviation and coefficient of variation. **12 Hours**

Unit-V. Skewness and Kurtosis:

Skewness- Definition, objectives and types of skewness, explanation of positive skewness and negative skewness with diagrams. Measures of skewness- Karl Pearson's coefficient of skewness and Bowley's coefficient of skewness. Simple problems.

Kurtosis-Definition and types of kurtosis. Explanation of types of kurtosis with neat diagrams. Measure of skewness based on moments. Difference between skewness and kurtosis.

12 Hours**Books for Reference:**

1. Gani,S.G (2003): Sankhyshastra and Ganakayantra,Udaya Ravi Publications, Bijapur.
2. Gupta,S.C (2018): Fundamentals of Statistics, Himalaya Publishing House, Bombay.
3. Gupta, S.C., and V.K.Kapoor (2007): Fundamentals of Applied Statistics: Sultan Chand & Sons.
4. Gupta, S.C., and V.K.Kapoor (2001): Fundamentals of Mathematical Statistics: Sultan Chand & Sons.
5. Mukhopadhyay, P(2022): Applied Statistics, New Central Book Agency (P) Ltd., Calcutta
6. Rajmohan: A Textbook of Statistics,Vol -1, Benaka Books

COURSE: DSC1B (BA–IISemester)

BIVARIATE ANALYSIS AND ECONOMIC STATISTICS

Course Outcomes (COs)

At the end of the course the student will be able to:

1. Calculate and interpret the correlation between two variables.
2. Employ the principles of linear regression for estimation and prediction of phenomenon.
3. To predicting the future trend values.
4. To understand variation in price and quantity related variables.

COURSE: DSC1B (BA–IISemester)

BIVARIATE ANALYSIS AND ECONOMIC STATISTICS

MAX.MARKS:100(SEC-80+ IA– 20)

Credits:5

Teaching Hours: 60 Hours

Workload: 05Hrs/ Week

Unit-I. Correlation:

Definition, meaning of types of correlation-positive, negative, perfect and no correlation with examples. Utility of study of correlation analysis. Methods of studying correlation. Scatter diagram-definition and explanation with charts. Merits and demerits, problems regarding construction of scatter diagram. Karl Person's coefficient of correlation-definition, formulae, and properties of coefficient of correlation. Problems based on ungrouped data. Spearman's Rank coefficient of correlation-definition and explanation of method with merits and demerits. Problems with ties and without ties. **12 Hours**

Unit-II. Regression:

Definition of regression, regression equation of X on Y and Y on X, Properties of regression co-efficient and regression lines. Problems based on ungrouped data. Comparison between correlation and regression. **12 Hours**

Unit-III. Association of Attributes:

Meaning of association of attributes, definition of class of the first order and second order. Methods of studying association. Yule's coefficient of association and its interpretation. Determination of Yule's coefficient of association in case of two attributes. **12 Hours**

Unit-IV. Index Numbers:

Definition, uses and limitations of index numbers. Brief description of the steps in the construction of index numbers, Classification of index numbers. Construction of Laspeyre's, Paasche's, Fishers, and Marshall – Edgeworth's price and quantity index numbers. Tests of an index number-Unit test, time reversal test, factor reversal test and circular test. Verification of index numbers satisfying the time reversal and factor reversal tests. Problems on index numbers. Cost of living index numbers- meaning, uses and brief description of the steps involved in the construction of a cost of living index number. Methods of construction of cost of living index numbers-Aggregate expenditure method and Family budget method. Problems on cost of living index number. **12 Hours**

Unit-V. Time Series:

Definition, uses, components of time series, brief explanation of the components of time series. Measurement of trend by graphical, semi average, moving averages method and problems on them. Method of least squares- Fitting of straight line trend-method, normal equations, obtaining trend values, estimating future trend and plotting the original and trend values on the graph. Fitting of second degree trend-Normal equations and obtaining trend line and making future estimates. **12 Hours**

Reference Books:

1. Goon A.M., Gupta M.K.and Das Gupta B. (2005): Fundamentals of Statistics, Vol. I, World Press, Calcutta.
2. Mukhopadhyay.P,(2005): Applied Statistics, New Central Book agency, Calcutta.
3. Gupta,S.P (2021): Statistical Methods-Sultan Chand & Sons Publications Delhi.
4. Gani,S.G (2003): Sankhyshastra and Ganakayantra,Udaya Ravi Publications, Bijapur.
5. Gupta,S.C (2018): Fundamentals of Statistics, Himalaya Publishing House, Bombay.
6. Rajmohan: A Textbook of Statistics,Vol -II Benaka Books

Question Paper Pattern in Applied Statistics(Optional) for all Semesters

Section A

I. Answer any **10** questions out of **12** questions(Q.No.1to 12)

10x2=20 Marks.

Section B

II. Answer any **4** questions out of **6** questions(Q.No.13to18)

4x5 =20marks.

Section C

III. Answer any 4 questions out of **6**questions(Q.No.19to 24)

4x10=40 marks.

Total=80 marks