

UNIVERSITY OF KERALA
Complementary Course in STATISTICS
for the students of BSc Degree Programme in Mathematics under CBCSS
SYLLABUS

(Applicable from 2014 Admissions)

Semester: 1

Type of course: **Complementary**

Course Code: **ST1131.1**

Course Name: **DESCRIPTIVE STATISTICS AND INTRODUCTION TO PROBABILITY**

Instruction Hours/Week: **4**

Number of credits: **3**

Module 1: Introduction: Nature and uses of Statistics in various disciplines, Limitations and misuse of Statistics. Types of Data: Concepts of primary data and secondary data, population and sample; Classification of data based on geographic, chronological, qualitative and quantitative characteristics, time-series data, discrete and continuous data, different types of scales-Nominal, Ordinal, Ratio and Interval. **(5H)**

Collection of data: Methods of collecting primary data- Preparation of questionnaires, checking consistency of data. Secondary data-major sources and limitations; Census and Sample Surveys; Methods of sampling: SRSWR & SRSWOR, sampling and non sampling errors; Presentation of raw data: Classification and tabulation-Construction of Tables with one or more factors of classification, frequency distributions relative and cumulative frequency distributions, their graphical representations; Charts and diagrams: stem and leaf chart, box plot, One dimensional and two dimensional diagrams. **(15H)**

Module 2: Types of descriptive statistics: Central tendency-mean, median, mode, geometric mean, harmonic mean and their properties; Dispersion-absolute and relative measures- Range, quartile deviation, mean deviation and standard deviation, coefficient of variation; moments raw and central; Skewness, Kurtosis and their measures. **(20H)**

Module 3: Random experiments: sample point and sample space-discrete and continuous, event, operations of events, concepts of equally likely, mutually exclusive and exhaustive events. **(10H)**

Module 4: Probability: Relative frequency and classical approaches, Axiomatic approach, Theorems in probability, probability space, conditional probability, multiplication theorem, independence of two and three events, compound probability, Bayes' theorem and its applications. **(22H)**

Module 5: Practical based on Modules 1; 2, 3 & 4- Preparation of questionnaire and data collection, Data analysis: presentation of data, calculation of descriptive statistics, Algebra of events and probability.

References

1. Bhat B.R. (1985): Modern Probability Theory, New Age International (P) Ltd.
2. Gupta S.C. and Kapoor V.K. (1980): Fundamentals of Mathematical Statistics, Sultan Chand and Sons, Delhi.
3. Gupta S.P. (1989): Statistical Methods, Sulthan Chand & Sons, Delhi.

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4. Jim Pitman (1996): Probability, Narosa Publishing House, New Delhi.
5. Kenny J.F. & Keeping E.S. (1954): Mathematics of Statistics-Part ID Van Nostard & Company, New Delhi.
6. Parimal Mukhopadhyay (1996): Mathematical Statistics, New Central Book Agency (P) Ltd, Culcutta.

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