SEMESTER I

MBG1C02. BIOSTATISTICS

4 Hrs/Week – I 3 credits

Unit 1. Scope of biostatistics – Types of Biological data – Data on Ratio scale – data on interval
scale – data on ordinal scale – continuous and discrete data – accuracy and precision. Frequency distribution for a data – Histogram – Frequency Polygon – Cumulative frequency distributions – Ogives. Population and sample – Random sampling – Parameter and Statistics.

Unit 2. Measures of Central Tendency and Measures of Dispersion – Arithmetic mean, Median,
Mode, Geometric mean. Range, Mean deviation, Variance, Standard deviation, Quartile deviation, semi interquartile range, coefficient of variation, indices of diversity.

Unit 3. Probability – Random experiment, sample space, events. Probability of events – mathematical definition – addition theorem and multiplication theorem (No proof expected, only problem solving).

Unit 4. Probability distributions. Bernoulli's distribution, Binomial distribution, Poisson distribution, and normal distribution. Parameters of these distributions, mean and variance (no derivations expected). Fitting of these distributions to real data sets.

Unit 5. Distributions derived from normal distribution – t-distribution, chi-square distribution, and
F-distributions and their applications.

Reference Books

1. Zar, J. H. Biostatistical Analysis, Fourth Edition (1999), Pearson Education Inc.
2. Gupta and Kapur**.** Introduction to Mathematical statistics, Sulthan Chand Publications, New-Delhi.

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SEMESTER II

MBG2C04. BIOSTATISTICS

4 Hrs/Week II 3 credits

Unit 1. **Testing of hypotheses:** Statistical hypothesis – Null hypothesis – alternative hypothesis –
simple and composite hypothesis. Type I and Type II error. General test procedure - Tests for goodness of fit – contingency table – tests for independence of attributes.

Unit 2. **Analysis of Variance :** One – way and two –way classified data – their mathematical model – analysis of variance – significance testing

Unit 3. **Regression Analysis:** simple linear regression – regression equations –regression coefficients – prediction values of Y – testing the significance of regression – confidence interval in regression - Analysis of variance.

Unit 4. **Simple Correlation:** Simple correlation – calculation of simple correlation from raw data –
calculation of correlation from regression coefficients - Testing the presence of correlation - Applications of correlation - Spearman's Rank correlation.

Unit 5. **Partial and Multiple correlations:** The concept of partial and multiple correlations - its
applications. Calculating partial correlation of order one from simple correlations.

Reference Books

1. Zar, J. H**.** Biostatistical Analysis, Fourth Edition (1999), Pearson Education Inc.
2. Gupta and Kapur**.** Introduction to Mathematical statistics, Sulthan Chand Publications