MANGALORE UNIVERSITY

DEPARTMENT OF STATISTICS

MSc STATISTICS

Open Elective	STE501 : Statistical Testing in Data Analysis	No. of credits: 3

Course Outcomes:

CO1: Demonstrate their knowledge of the basics of inferential statistics by making valid generalizations from sample data

CO2: Perform Test of Hypothesis as well as calculate confidence interval for a population parameter for single sample and two sample cases. Understand the concept of p-values.

CO3: Learn non-parametric test such as the Chi-Square test for Independence as well as Goodness of Fit.

CO4: Compute and interpret the results of Bivariate and Multivariate Regression and Correlation Analysis, for forecasting and also perform ANOVA and F-test.

Unit 1

Population and sample, parameter, statistic, estimator, statistical properties of estimators.

Basic concepts concerning testing of hypotheses, procedure for hypothesis testing. Null hypothesis, alternate hypothesis, statistical test procedures, test statistic, two types of errors, level of significance, p-value, size and power of the test. One sided and two sided test procedures. Parametric and nonparametric tests. (10 hours)

Unit 2

Assumptions, test procedures and examples - One sample Z test, hypothesis testing of means, hypothesis testing for differences between means under equal variance and unequal variances, paired t-test, tests for proportions. Sample size and its determination.

Hypothesis testing for comparing a variance to some hypothesized population variance, testing the equality of variances of two normal populations, hypothesis testing of correlation coefficients, confidence intervals. (14 hrs)

Unit 3

Non-parametric tests, sign test, Wilcoxon signed rank test, Wilcoxon rank sum test-Mann-Whitney test, Contingency tables - Chi-square test for independence of attributes,

Principles of design of experiments, basic principle of ANOVA, ANOVA – CRD, RBD, LSD. Tukey multiple comparison test with equal sample sizes, Tukey-Kramer test with unequal sample sizes. (16 hrs.)

References:

1. J.Medhi (1992): Statistical Methods : An Introductory Text, Wiley Eastern Limited.
2. Douglas A. Lind, William C. Marchal, Samuel A. Wathen (2012), "Basic Statistics for Business & Economics" McGraw-Hill Education