FACULTY OF SCIENCES

SYLLABUS

FOR

INTERDISCIPLINARY COURSE IN MATHEMATICS (PG)

Examinations: 2019 - 20

GURU NANAK DEV UNIVERSITY AMRITSAR

Interdisciplinary Course in Mathematics (PG)

TESTING OF HYPOTHESIS (MTL 052)

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Mid Semester Examination: 20% weightage
End Semester Examination: 80% weightage

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Section – A

Basic Concepts of testing of hypothesis: Null hypothesis, Alternative hypothesis, one-tail and two-tails tests, Types of errors: type I error and type II error, level of significance, power of the test, p value.

Hypothesis testing of a single mean and difference of two means (both under the assumption of normality and large sample case), paired comparisons, hypothesis testing of a single normal variance and ratio of two normal variances.

Section – B

Analysis of variance: one-way analysis of variance and two-ways analysis of variance with single observation per cell. Multiple comparison procedures: Bonferroni method, Tukey's HSD Test, Fisher LSD test, Dunnett's test, Newmann-Keul Test, Duncan test.

Section – C

Non-parametric tests: Sign test, Wilcoxon signed-rank test, median test, Mann Whitney test Kruskial-Wallis, Friedman Test, Spearman rank correlation.

Section - D

Tests of single proportion and equality of two proportions (large sample case). Analysis of frequency data: Tests ofgoodness of fit, test of independence test of homogeneity. Fisher exact test. Relative risk, Oddratio.

Books Recommended:

1. S. C. Gupta and V. K. Kapoor. Fundamental of Mathematical Statistics.
2. Miller, R. G. Simultaneous Statistical Inference
3. Gibbon, J. D. Non-parametric Statistical Inference
4. Belle, G. V., Fisher, L. D. Heagertly, P.J. and Lumley, T. Biostatistics: A Methodology for the Health sciences.
5. Daniel, W. W. C. L. Biostatistics: Basic Concepts and Methodology for the Health Sciences