Appendix A
BOS 20.10.2016

DEPARTMENT OF STATISITICS & OPERATIONS RESEARCH
ALIGARH MUSLIM UNIVERSITY ALIGARH
M.A./M.Sc.
Course Code-STM4091
Applied Statistics

An open elective course to be offered to M.A./M.Sc. Students of Faculty of Science other than M.A./M.Sc. (Statistics) and M.A./M.Sc. (Operations Research)

Credits 04 **M.M.: 30+70=100**

Course objectives: To introduce the elements of applied statistics
Course outcomes: On successful completion of this course, the students will be able to

- Describe the concepts of applied statistics in real life scenario.
- Apply the techniques in data science.

Syllabus

Unit I: Measures of central tendency, measures of dispersion, measures of skewness and kurtosis, basic concept of probability theory, introduction to random variables and its probability distributions, standard probability distributions: Bernoulli, binomial, Poisson, geometric, normal, exponential and lognormal.

Unit II: Bivariate data and scatter diagram, simple correlation, partial and multiple correlation, simple and multiple regression analysis, sampling distributions, testing of hypothesis, p-value, Z-test, t-test, F-test and Chi-square test.

Unit III: Principles of experimental design, statistical models for experimental design, completely randomized design, randomized block design, Latin square design, Analysis of variance for one-way and two-way classifications.

Unit IV: Concept of sample surveys, simple random sampling with replacement and without replacement, stratified random sampling, systematic random sampling, ratio and regression methods.

Books Recommended:

1. Andrew F. Siegel (1988): Statistics and Data Analysis: An Introduction' John Wiley & Sons, Inc. New York
2. John E. Freund (1979): Modern Elementary Statistics, Fifth Edition, Prentic-Hall, Inc., Englewood Cliffs, New Jersey.
3. Snedecor, G. W. and Cochran, W. G. (1989): Statistical Methods, 8th Ed., Wiley India.
4. R. Lyman Ott and Michael Longnecker (2001): An introduction to Statistical Methods and data analysis, 5th Ed., Thomson Learning, Inc.
5. Hogg R.V., Tanis E.A. & Zimmerman, D. (2014): Probability and Statistical Inference, 9th Ed., Pearson Education.
6. Montgomery, D. C. (2013): Design and analysis of experiments, 8th Ed., John Wiley & Sons, Inc.
7. Cochran, W.C. (1977): Sampling Technique, 3rd Ed., John Wiley & Sons, Inc.