

**DEPARTMENT OF MATHEMATICS,  
UNIVERSITY OF KARACHI,**

**Course Outline**

**MATH 633: MATHEMATICAL STATISTICS – I**

**Course contents:**

Combinatorics, Axioms of Probabilities, Conditional probability and independence. Random variables, Distribution function, Discrete probability distributions: Uniform, Bernoulli, Binomial, Poisson, Negative Binomial and Hyper geometric distributions. Continuous probability functions: Uniform, Exponential, Gamma, Beta, Weibull, Cauchy, and Rayleigh Distributions. Expected value of a random variable, Moment generating function, Probability generating function.

**Books Recommended:**

1. Robert, V. H., Allen, C. and Joseph, W. M., Introduction to Mathematical Statistics, Fourth Edition, Prentice Hall, 2004.
2. Elliot, A.T. and Robert V. H., A brief Course in Mathematical Statistics, Amazon, Com. Inc. 2007.
3. Richard, J. L. and Morris L. M., An introduction to Mathematical Statistics, Prentice Hall, 2000.
4. Larsen, R. J. and Marx, M. L., An introduction to Mathematical Statistics and its Applications, Englewood Cliffs, N. J., 2005.
5. Bain, L. J. and Engelhardt. M., Introduction to probability and Mathematical Statistics, Third Edition, Duxbury Press, 1992.
6. Balakrishnan, N. and Cohen, A. C., Order Statistics and Inference, Academic Press, Inc., New York, 1991.
7. Casella, G. and Berger. R. L., Statistical Inference, Second Edition, Wadsworth Publishing Company, 1999.
8. Hoog, R. V. and Tanis E. A. , Probability and Statistical Inference, Seventh Edition, Prentice Hall, 2005.
9. David, H. A., Order Statistics, Second Edition, John Wiley and Sons, New York, 1981.
10. Mood, A. M., Graybill, F. A. and Boes D. C., Introduction to the Theory of Statistics, Third Edition, McGraw-Hill, 1974.
11. Shao, J., Mathematical Statistics, Second Edition, Springer, 2003.
12. Wakerly, D. R., Mendenhall, W. W. and Scheaffer, R. L., Mathematical Statistics with applications, Duxbury Press, 2007.

13. Johnson N. L., Kotz S., and Balakrishnan N., Continuous Univariate Distribution, Vol 1, Second Edition, Wiley Interscience Pub., John Wiley and Sons Inc., 2000.