Semester-VII

Module Code:	STAT-401 STAT-402
Module Title:	• Statistical Inference-I (Theory) – 3 Credit Hours • Practical – 1 Credit Hour
Name of Scheme:	BS Statistics

Course Outline

Point estimation, problem of estimation. Properties of a good estimator: Unbiasedness, Consistency, Efficiency and Sufficiency. Mean-squared error. Consistency and Best asymptotically normal estimator. Minimal sufficient statistics. Joint sufficiency. Exponential family. Sufficiency and Completeness. Cramer-Rao inequality. Minimum Variance Bound estimators. Rao-Blackwell and Lehmann-Sheffe theorems. Uniformly Minimum Variance Unbiased estimators. Joint completeness. Location invariant and scale-invariant estimators. Pitman estimators for location and scale.

Bayes estimators. Prior and Posterior distributions. Posterior Bayes estimators. Loss function and Risk function. Bayes estimator, Minimax Methods of estimation.

Books Recommended

1. Hogg, R.V. and Craig, A.T. “Introduction to Mathematical Statistics”, Prentice-Hall International, Inc. Engle Wod Cliff, N.J., Sixth Edition, 2004.
2. Hogg, R.V. and Tanis E.A., “Probability and Statistical Inference” Macmillan Publishing Company, New York, Seventh Edition, 2009.
3. Mood, A.M. Graybill, F.A. and Boes, D.C., “Introduction to the Theory of Statistics”, McGraw-Hill Book Company, New York, Third Edition, 1974.
4. Levy, P.S. and Lemeshow, S, “Sampling of Populations: Methods and Applications”, John Wiley, New York, Third Edition, 1999.
5. Lehman, E.L. “Theory of Point Estimation”, John Wiley, New York, 1983.
6. Rao, C.R., “Linear Statistical Inference and its Applications”, John Wiley, New York, 1973.
7. Hoel, P.G. “Introductions to Mathematical Statistics” Fifth Edition, John Wiley, 1984.

Reference Books

1. Lindgrind, B.W. “Statistical Theory” Macmillan Publishing Company, New York, Third Edition, 1976.
2. Stuart, A. and Ord, J.K. “Kendalls Advanced Theory of Statistics, Vol-2, Edward Arnold, London, Fifth Edition, 1991.
3. Spanos. A “Probability theory and Statistical Inference” Cambridge University Press, 1999.
4. Welsh, A.H. “Aspects of Statistical Inference” John Wiley, 1996.
5. Freund, J.E. “Mathematical Statistics” Sixth Edition, 1999.
6. Kale, B.K. “a first course on parametric inference” Narosa, India, 1999.
7. Hagan, A. “Kendall’s Advanced theory of Statistics Vol.2B; Baysian inference” Arnold, U.K. 1994.