Code	Subject Title	Cr. Hrs	Semester
STAT-401	**Statistical Inference-I (Theory)**	**3**	**VII**
Year	Discipline		
4	**Statistics**		

Code	Subject Title	Cr. Hrs	Semester
STAT-402	**Statistical Inference-I (Practical)**	**1**	**VII**
Year	Discipline		
4	**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.

Recommended Books:

- Hogg, R.V. and Craig, A.T. "Introduction to Mathematical Statistics", Prentice-Hall International, Inc. Engle Wod Cliff, N.J., Sixth Edition, 2004.
- Hogg, R.V. and Tanis E.A., "Probability and Statistical Inference" Macmillan Publishing Company, New York, Seventh Edition, 2009.
- 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.
- Levy, P.S. and Lemeshow, S, "Sampling of Populations: Methods and Applications", John Wiley, New York, Third Edition, 1999.
- Lehman, E.L. "Theory of Point Estimation", John Wiley, New York, 1983.
- Rao, C.R., "Linear Statistical Inference and its Applications", John Wiley, New York, 1973.
- Hoel, P.G. "Introductions to Mathematical Statistics" Fifth Edition, John Wiley, 1984.

Reference Books:

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