

## BS (4 Years) for Affiliated Colleges



Code	Subject Title	Cr. Hrs	Semester
<b>STAT- 407</b>	<b>Statistical Inference-II (Theory)</b>	<b>3</b>	<b>VIII</b>
Year	Discipline		
<b>4</b>	<b>Statistics</b>		

Code	Subject Title	Cr. Hrs	Semester
<b>STAT-408</b>	<b>Statistical Inference-II (Practical)</b>	<b>1</b>	<b>VIII</b>
Year	Discipline		
<b>4</b>	<b>Statistics</b>		

### Course Outline

Method of moments. Maximum likelihood method and its properties. Method of least squares and its properties. Ordered least squares estimation of location and scale parameters. Minimum chi-square method.

Interval estimation. Confidence interval and its interpretation. One-sided confidence intervals. Methods of finding confidence intervals. Pivotal quantity method. Confidence intervals for the mean and variance. Confidence region for the mean and variance. Large-sample confidence intervals. Bayesian interval estimates. Shortest sets of confidence intervals.

Tests of Hypotheses. Simple and composite hypotheses. Power function. Size and power of a test. Randomized and Non-randomized tests. Most powerful tests. Neyman-Pearson lemma. Loss function and Risk function. Bayes test. Generalized likelihood-ratio tests. Uniformly most powerful unbiased test. Monotone likelihood ratio tests of hypotheses. Sequential probability ratio test. Approximate sequential probability ratio test. Average sample number.

### Recommended Books:

- Hogg, R.V., & Craig, A.T. (1995). Introduction to mathematical statistics (5th ed.). MacMillan: New York.
- Mood, A.M., Graybill, F.A., & Boes, D.C. (1974). Introduction to the theory of statistics (3rd ed.). McGraw-Hill: New York.
- Levy, P.S., & Lemeshow, S. (2008). Sampling of populations: Methods and applications (4th ed.). John Wiley: New York.

- Lehmann, E.L., & Casella, G. (1998). Theory of point estimation (2nd ed.). Springer: New York.
- Rao, C.R. (2001). Linear statistical inference and its applications (2nd ed.). John Wiley: New York.
- Hoel, P.G. (1984). Introduction to mathematical statistics (5th ed.). John Wiley: New York.

## **Reference Books**

- Hogg, R.V., & Tanis, E.A. (2005). Probability and statistical inference (7th ed.). Prentice Hall: New Jersey.
- Lindgren, B.W. (1993). Statistical theory (4th ed.). Chapman and Hall: New York.
- Kendall, M., Stuart, A., & Ord, J.K. (1991). Kendall's advanced theory of statistics, Vol. 2: Classical Inference and relationship (5th ed.). Oxford University Press: New York.
- Spanos, A. (1999). Probability theory and statistical inference. Cambridge University Press: UK.
- Welsh, A.H. (1996). Aspects of statistical inference (1st ed.). John Wiley: New York.
- Miller, I., & Miller, M. (1998). John E. Freund's mathematical statistics (6th ed.). Prentice Hall: New Jersey.
- Kale, B.K. (2005). A first course on parametric inference (2nd ed.). Narosa: New Dehli.