NORTH MAHARASHTRA UNIVERSITY, JALGAON
Syllabus for Ph.D.(Statistics) course work
Paper-II

Probability
- Basic Probabilities, Discrete spaces.
- Random Variables and Distributions.
- Expectation, Variance and Moments.
- Moments Inequalities.
- Distribution Function, Generating Functions and Characteristic Functions.
- Limit Theorems, Laws of Large Numbers and Central Limit Theorems.
- Martingales.
- Discrete time Markov chains countable state space, classification of states.
- Markov processes and Stationary processes.
- Renewal processes.

Inference
- Minimum Variance Unbiased Estimation.
- The Method of Least Squares.
- The Method of moments and Maximum Likelihood.
- Consistent Estimators and Consistent Asymptotically Normal Estimators.
- Estimating Functions and Equations.
- Hypothesis Testing.
- Confidence Intervals.
- The Likelihood-Ratio test and its alternative Large-Sample Equivalents.
- The Bayesian Approach.
- Non-Parametric Tests.

Books Recommended

1. B.R. Bhat (1999) : Modern Probability Theory
2. T.Cacoullos (1987): Exercises in Probability, Narosa publication
3. E.J. Dudewicz and S.N. Mishra(1988): Introduction to Probability and Mathematical Statistics
4. W. Feller (1969): Introduction to Probability and its applications Vol.II
5. V.K. Rohatgi and A.K.M. Saleh(2001): An Introduction to Probability Theory and Statistics.
6. D.R.Cox and D.V.Hinkley(1974): Theoretical Statistics
7. V.P.Godambe(1991): Estimating Functions
8. B.K.Kale (2002): A First course on Parametric Inference(2nd Ed)
9. E.L. Lehmann(1983): Theory of Point Estimation
10. E.L. Lehmann(1986): Testing of Statistical Hypotheses
11. S.D.Silvey(1995): Statistical Inference.
12. Ross, S. (2005). Introduction to Probability Models, (6th Ed. Academic Press).
13. Taylor and Karlin (1984). An Introduction to Stochastic Modeling, (Academic Press)