

SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (Statistics)
Semester: III
Syllabus with Effect from: June-2013

Paper Code: PS03ESTA01	Total Credit: 4
Title Of Paper: Reliability and Life Testing	

Unit	Description in Detail	Weightage (%)
I	Reliability concepts, remaining life time, mean time between failure (MTBF), hazard function (HF), bath–shape HF, Reliability in terms of HF. Estimation of parameters and tests in these models. Reliability estimation based on failure times in various censored life tests and in tests with replacement of failed items; stress-strength reliability and its estimation.	25%
II	Life distribution; reliability function; hazard rate; common life distributions- Exponential, Weibull, gamma, Pareto and lognormal distributions.	25%
III	Reliability concepts and measures; components and systems; coherent systems; reliability of coherent systems; cuts and paths; modular decomposition; bounds on system reliability; structural and reliability importance of components.	25%
IV	Bayes estimator, for exponential, negative exponential, Weibull and normal life model. Estimation of survival function-Actuarial Estimator, Kaplan-Meier Estimator; Properties of K-M estimator;	25%

Basic Text & Reference Books:-

- Cox, D.R. and Oakes, D. (1984) Analysis of Survival Data, Chapman and Hall, New York.
- Gross A.J. and Clark, V. A. (1975) Survival Distributions: Reliability Applications in the Biomedical Sciences, John Wiley and Sons.
- Elandt - Johnson, R.E. Johnson N.L. (1980) Survival models and Data Analysis, John Wiley and Sons
- Miller, R.G.(1981) Survival Analysis (Wiley)
- Barlow R. E. & Proschan F. (1975) Statistical Theory of Reliability & Life testing. Holt, Rinehart & Winston Inc.
- Zacks, S. Reliability

