Reliability Engineering

Introduction to Reliability Engineering; Reliability Mathematics; Load-strength Interference
Statistical Experiments: Statistical Design of experiments and ANOVA
Reliability prediction and Modelling: system reliability models, Modular design, Fault Tree Analysis, Petri Nets, Markov Analysis, Monto Carlo Simulation
Reliability in Design: Quality Function Development, Load-strength analysis, Failure modes, effects and criticality analysis (FMCEA), Reliability prediction for FMCEA; Reliability of Mechanical Components and System: Mechanical stress, strength, fracture, fatigue, creep, wear, corrosion, vibration and shock, temperature effects, materials, components, processes.
Reliability Testing: Planning reliability testing, Test environments, testing for reliability and durability: accelerated test, failure reporting, analysis and corrective action systems.
Analysis of Reliability Data: Pareto analysis, accelerated test data analysis, reliability analysis of repairable systems, reliability demonstration, Non-parametric methods, reliability growth monitoring.

References:

1. Patrick D. T. O'Connor, Practical Reliability Engineering, John Wiley & Sons
2. L S Srinath, Concepts in Reliability Engineering, Affiliated East West Publishers