Quality Management and Reliability

Module- I (8 hours)
Attributes of quality, Evolution of philosophy of Quality Management: Inspection, Quality Control, Quality Assurance, Total Quality Management, Cost of quality
Acceptance sampling: Design of single sampling plan. Double, multiple and sequential sampling plans, O.C. curve, Producer"s risk and consumer"s risk, AOQ, AOQL

Module-II (10 hours)
Statistical process control, Use of control charts and process engineering techniques for implementing quality plan, X-Chart, R-Chart, p-chart, np-chart, c-chart, cusum-chart, Process capability analysis, statistical tolerance analysis
Experimental designs and factorial experiments: 2k factorial experiments, Taguchi philosophy; Loss function; Signal to noise ratio, Orthogonal arrays for parameter and tolerance design.

Module-III (6 hours)
Definition – Reliability vs quality; Reliability function – MTBF, MTTR, availability; Bathtubcurve – time dependent failure models – distributions – normal, weibull; Reliability of system and models – serial, parallel and combined configuration; Economic analysis and life cycle cost; Proactive, preventive, predictive maintenance; Maintainability and availability

Module-IV (8 hours)
Quality Improvement: Fundamentals of TQM; Some important philosophies and their impact on quality (Deming, Juran, Crossby); Quality circle, QC Tools;Service Quality; Quality Standard: Product and Process Standard, Introduction to ISO 9000 and 14000 standards; Concept of Six Sigma, Lean Management and TPM

BOOKS

1. Srinath L.S, "Reliability Engineering", Affiliated East-West Press Pvt Ltd, New Delhi,1998.
2. Modarres, "Reliability and Risk analysis", Maral DekkerInc.1993.
3. John Davidson, "The Reliability of Mechanical system" published by the Institution of Mechanical Engineers, London,1988.

REFERENCES

4. Smith C.O. "Introduction to Reliability in Design", McGraw Hill, London,1976.