

PPD5J001 STATISTICAL QUALITY CONTROL AND RELIABILITY

Module-I (10 hours)

Quality Control: Causes of variation, standard errors of mean, Process capability analysis, Natural tolerance limits, Specification Limits, Trial and Revised Control limits, Rational Subgroups, Methods and Philosophy of Statistical Process Control, Control Charts for variables (X, R, S, CUSUM, EWMA), Control Charts for attributes.(P, np)

Sampling Plans: Design of single sampling plan, double, multiple and sequential sampling plans, O.C. curve, AOQ, AOQL, ATI, AFI, ASN.

Module-II (10 hours)

Quality Engineering: Taguchi's quadratic loss function, Off line & online quality control, importance of parameter selection design, experimental design principle for product and process design, two-level experimental for full factorial and fractional factorial design, S/N ratio, Inner and outer arrays.

Module-III (10 hours)

Total Quality Control: Components of TQM, TQM Implementation, Quality function deployment, PDCA cycle, Quality Circle: Implementation, Training for QC, Kaizen and Poke Yoke Systems, Quality Cost, Concept of Zero defect, Quality assurance systems- ISO 9000, 14000, 18000.

Module-IV (10 hours)

Reliability: System effectiveness, Mission reliability, Design adequacy, Operational readiness, serviceability, performance indices, their evaluation, uses and limitation, reliability models of maintained systems, relationship between reliability and maintainability, system with components in series, parallel and standby, Maintainability prediction.

TEXT BOOK(S):

1. Fundamentals Of Quality Control & Improvement- A.Mitra, PHI
2. Introduction to Statistical Quality Control- D.C.Montgomery, John Wiley & Sons.
3. Total Quality Control- A.V.Feigenbaum, TMH.

REFERENCE(S):

1. Statistical Quality Control- E.L. Grant and R.S. Leavenworth, McGraw Hill.
2. Taguchi techniques for Quality Engineering- P.J.Ross, McGrawHill.
3. Quality Assurance through ISO 9000- H.D. Gupta, South Asia publication.