

Statistics for Quality

1. Role of Statistics in quality: historical review, statistics for understanding and reducing variation, optimisation, robustness relationships. Material at a rote knowledge level.
2. Shewhart-Deming cycle of process improvement: Shewharts three postulates from an engineering point of view, PDCA cycle. Material at a comprehension level.
3. Statistical thinking for quality: American Society for quality description of Statistical Thinking for Systems, view of a process, Six Sigma methodology, Total quality management. Material at a comprehension level.
4. Reducing Common Cause Variation. Brief reference to Design and Analysis of Experiments Chapter; and a Case Study, Process Capability. Material at a comprehension level.
5. Process Monitoring With Control Charts: 7 tools (reference to EDA Chapter), Rational Subgrouping, Shewhart chart model. Material at a comprehension level.
6. Variables Control Charts: \bar{X} , R and S charts, construction examples, Chart revision. Material will be at application level. EWMA, MA and CUSUM will be just mentioned.
7. Attribute Control Charts, C and np charts (u and p charts will be briefed). Material at an application level.
8. Acceptance Sampling: sampling for product assurance, Operating Characteristic Curve, International Standards for sampling inspection. Material at a comprehension level.