

QUALITY TECHNIQUES II

COURSE CONTENT

1 PROBABILITY

- 1.1 Tree Diagram
- 1.2 The mn Rule
- 1.3 Empirical Probability
- 1.4 Venn Diagram
- 1.5 Conditional Probability
- 1.6 Factorials
- 1.7 Permutations
- 1.8 Combinations

2 DISCRETE DISTRIBUTIONS

- 2.1 The Hypergeometric Distribution
- 2.2 The Binomial Distribution
- 2.3 The Poisson Distribution

3 NORMAL DISTRIBUTION

- 3.1 The Uniform Distribution
- 3.2 The Normal Distribution
- 3.3 The Normal approximation to the Binomial Distribution
- 3.4 The Standard Error of the Mean
- 3.5 Confidence Interval for a Mean Value
- 3.6 Statistical Decision Making
 - 3.6.1 Hypotheses
 - 3.6.2 Test Statistics
 - 3.6.3 Levels of Significance
 - 3.6.4 Decision Rules

3 NORMAL DISTRIBUTION

- 3.6.5 Normal Distribution Decision
- 3.6.6 Degrees of Freedom
- 3.6.7 The Student t Distribution
- 3.6.8 Chi Squared Distribution

4 CONTINGENCY TABLES

- 4.1 2 X 2 Contingency Table
- 4.2 Yates Continuity Correction
- 4.3 Co-efficient of Contingency
- 4.4 R X C Tables

5 ANALYSIS OF VARIANCE

- 5.1 One Way Classification
- 5.2 A Procedure for Calculation
- 5.3 Two Way Classification
- 5.4 Latin Square Designs

6 FACTORIAL DESIGN

- 6.1 a x b Factorial Design
- 6.2 a x b x c Factorial Design
- 6.3 2^3 Factorial Design

7 NON-PARAMETRIC STATISTICS

- 7.1 Sign Test
- 7.2 Wilcoxon Rank Sum Test
- 7.3 Mann Whitney U Test

8 SAMPLING

- 8.1 Calculation of Estimated Process Average
- 8.2 Switching Rules

- 8.3 Sequential Sampling
- 8.4 Choosing an Inspection Level
- 8.5 Limiting Quality Sampling Plans
- 8.6 Skip Lot Sampling
- 8.7 Variable Sampling
 - 8.7.1 Methods
 - 8.7.2 Quality Statistic Q

9 CUMULATIVE SUM CONTROL CHARTS

- 9.1 Cumulative Sum Charting
- 9.2 Some Cumulative Sum Charting Applications
- 9.3 Conditions for Cumulative Sum Charting Use
- 9.4 Choosing the Chart Scale
- 9.5 Typical Calculations for Finding the Standard Error σ_e
- 9.6 Chart Interpretation
- 9.7 Designing a V Mask
- 9.8 Using V Mask

10 RELIABILITY

- 10.1 The Weibull Distribution
- 10.2 The Bathtub Curve
- 10.3 Definition
- 10.4 Reliability Calculations
- 10.5 The Negative Exponential Function
- 10.6 Series Circuits
- 10.7 Unreliability
- 10.8 Parallel Reliability
- 10.9 Series-Parallel Systems

11 REGRESSION ANALYSIS LEAST SQUARES METHOD