

# Statistical and Analytical Techniques

3 Day Course

RGC-SAT03



Rylson Group

Course Outline

Statistical and Analytical Techniques	
<b>Objective</b>	To train participants to use a variety of statistical analytical tools and techniques that can be used to generate continuous improvement.
<b>Benefits</b>	<ul style="list-style-type: none"><li>▪ The feedback loop in the continuous improvement cycle will be closed through effective interpretation of data.</li><li>▪ Derive skills in how to effectively use statistical analysis tools to solve problems.</li></ul>
<b>Who Should Attend?</b>	All Personnel who are involved in business process control and are required to proactively identify gaps between the budgeted and actual performance to achieve continuous improvement.
<b>Course Outline</b>	Introduction to theoretical and practical aspects of Data Analysis using a variety of analytical techniques for problem solving, including using Microsoft Excel data analysis tools.



## 1.0 WELCOME AND INTRODUCTION

Welcome and introductions

Course content

Brief history of maintenance

The need for statistical measurement and analytical techniques

What to analyse

The maintenance process

## 2.0 COLLECTION AND DISPLAY OF DATA

Summary of data to collect

Organising and displaying data

Samples and population

Activity sampling

## 3.0 DATA ANALYSIS USING ANALYTICAL TECHNIQUES

Summary statistics

Box and whisker plots

Scattergrams and correlation

Pareto analysis

## 4.0 PROCESS ANALYSIS USING ANALYTICAL TECHNIQUES

Flow charts

Process mapping

Fault tree diagrams

Cause and effect analysis



## 5.0 MEASURING AND DISPLAYING VARIATION

- Variables and variation
- Controlled variation
- Uncontrolled variation
- Run charts
- The normal (Gaussian) distribution
- Histograms

## 6.0 CALCULATION OF PROCESS CAPABILITIES

- Capability study
- Capability ratio
- Procedure for a capability study
- Interpreting the result

## 7.0 CONTROL CHARTS

- Recap of normal distribution
- Control limits
- Interpreting the control chart
- Plotting time to failure

## 8.0 FAILURE DATA ANALYSIS

- Failure data to predict reliability
- Probability density functions
- Weibull distributions
- Weibull example

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## 9.0 EXAMPLES OF STATISTICAL APPLICATIONS IN MAINTENANCE

Replacement

Inventory

Key Performance Indicators and process control

## 10.0 KEY PERFORMANCE INDICATORS