Course: Data Analysis Techniques for Engineers & Technologists

Code	City	Hotel	Start	End	Price	Language - Hours
360	Rome (Italy)	Hotel Meeting Room	2025-02-17	2025-02-21	5950 €	En - 25

Introduction

Corporate ethos which demands continual improvement in work place efficiencies and reduced operating, maintenance, support service and administration costs means that managers, analysts and their advisors are faced with ever-challenging performance targets.

In order to make decisions resulting in improved business performance it is vital to base decision making on appropriate analysis and interpretation of data.

Objectives

This seminar aims to provide those involved in analysing data with the understanding and practical capabilities needed to convert data into information via appropriate analysis, and then to represent these results in ways that can be readily communicated to others in the organisation.

Objectives include:

- To provide delegates with both an understanding and practical experience of a range of the more common analytical techniques and data representation methods which have direct relevance to decision performance monitoring, decision making, and process improvement.
- To give delegates the ability to recognize which types of analysis are best suited to particular types of problems.

- To give delegates sufficient background and theoretical knowledge to be able to judge when an applied technique will likely lead to incorrect conclusions.
- To provide delegates with a working vocabulary of analytical terms to enable them to converse with people who are experts in the areas of data analysis, statistics and probability, and to be able to read and comprehend common textbooks and journal articles in this field.
- To introduce some basic statistical methods and concepts.
- To explore the Excel "Data Analysis" tool pack and Functions.

Training Methodology

The course adopts an applications-oriented approach, minimizing the time spent on the mathematics of analysis and maximizing the time spent on the use of practical methods and understanding why such methods work . Delegates will explore Excel`s functionality and Data Analysis Tool Pack to investigate realistic data from a wide range of technical and non technical example applications.

Organizational Impact

Organizations that are able to make optimum decisions will enhance their ability to compete on the global stage.

The participants on this course, and therefore the teams that they work within will, as a result of their training, be better positioned to influence the organization with recommendations based on objective data analysis that in turn produce a higher performing business.

Individuals exposed to this training will develop new insights into the field of data analysis, and they will learn why the best companies in the world see data analysis essential to delivering the right quality products and services at the lowest costs.

Personal Impact

Participants will gain an understanding and practical experience of a range of the more common analytical techniques and data representation methods, which have direct relevance to a wide range of issues.

The ability to recognize which types of analysis are best suited to particular types of issue.

A sufficient background and theoretical knowledge to be able to judge when an applied technique will likely lead to incorrect conclusions.

Who Should Attend?

The course has been designed for professionals whose jobs involve the manipulation, representation, interpretation and/or analysis of data. Basic familiarity with PC and in particular with Microsoft Excel is assumed. The course consists of a large amount of data analysis and therefore delegates will be expected to be numerate and enjoy working with data.

Seminar outline

Examples/case studies/ workshops, definitions and relevant Excel functions and Excel analysis tool pack are included throughout the course. Workshops will be based on engineering and non-engineering areas such as the following applications:

- Process Performance monitoring
- Benchmarking
- Rejects/failures
- Supplier analysis, ability to meet specification / purchasing decisions
- Questionnaire analysis
- Absenteeism

- Salary analysis

In addition there will include many case studies and examples from a range of applications.

The Basics

The need and role of data analysis in business today, types of data, the two data enemies of data analysts, the data acquisition model.

Charting and understanding categorical data:

Bar charts and their derivatives: what they are and how to use them. Pareto charts. Location charts.

Summarising data with descriptive statistics:

Mean/Average, Median, Mode, Percentiles, Deciles, and Quartiles. Measures of dispersion: The range, standard deviation and variance.

Investigating and understanding variation of a set of data:

Box & whisker plots, histograms check sheets and how to interpret them

The basis of statistical analysis: the normal distribution:

The normal distribution, the origin of Six Sigma, the z-score, the standard normal distribution.

How to monitor and predict future process performance:

Variation in processes.

Common and special causes of variation, tampering, statistical control, control charts: what they are and how to use them

An introduction.

How to predicting future performance.

Other uses of the control charts.

How to predicting future performance.

Some common data distributions and their uses:

Poisson and binomial distributions, their relationship to other distributions and where they are likely to occur in business, specifically the occurrence of time based events.

Investigating the relationships between variables:

Scatter diagrams and their derivatives.

Correlation and the correlation coefficient. Covariance.

Linear regression analysis, least squares estimation and the analysis of variance.

More complex regression models and transformations.

Calculating the ability of process to operate within specification:

Process capability, specification limits, calculating process capability.

Estimating values and calculating confidence intervals:

Point estimates and confidence intervals for averages and standard deviations.

Hypothesis Testing for means and standard deviations:

The hypothesis testing model.

ANOVA. t, F and Chi-square tests and their uses, contingency tables.

Hypothesis testing for non-normal data:

Applications for the Chi-square distribution

The data analysis model:

How to get from data to conclusion

The Scandinavian Academy for Training and Development employs modern methods in training and skills development, enhancing the efficiency of human resource development. We follow these practices:

- **Theoretical Lectures:**
    - We deliver knowledge through advanced presentations such as PowerPoint and visual materials, including videos and short films.
- **Scientific Assessment:**
    - We evaluate trainees skills before and after the course to ensure their progress.
- **Brainstorming and Interaction:**
    - We encourage active participation through brainstorming sessions and applying concepts through role play.
- **Practical Cases:**
    - We provide practical cases that align with the scientific content and the participants specific needs.
- **Examinations:**
    - Tests are conducted at the end of the program to assess knowledge retention.
- **Educational Materials:**
    - We provide both printed and digital scientific and practical materials to participants.
- **Attendance and Final Result Reports:**
    - We prepare detailed attendance reports for participants and offer a comprehensive program evaluation.
- **Professionals and Experts:**
    - The programs scientific content is prepared by the best professors and trainers in various fields.
- **Professional Completion Certificate:**
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- **Program Timings:**
    - Training programs are held from 10:00 AM to 2:00 PM and include coffee break sessions during lectures.