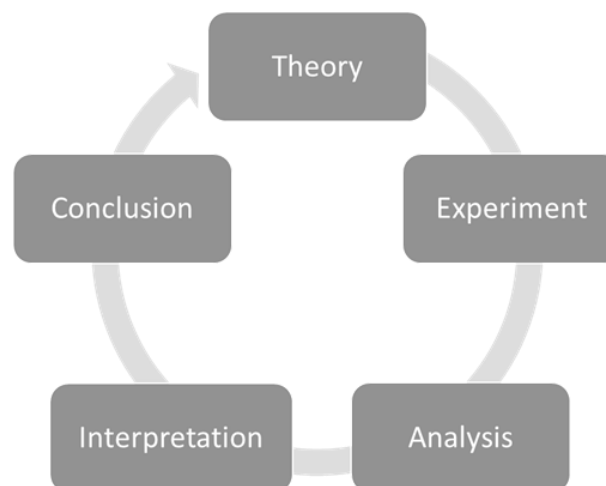


## Introduction to Design of Experiments

DoE is a structured statistical technique for establishing cause and effect relationships, which in turn form the foundation for organisational learning. Due to their efficient use of data and deployment in a team environment, learning occurs at an accelerated pace, critical in today's highly competitive markets.

The benefits of using DoE include:

- determining what factors affect performance and which do not
- gaining a deep understanding of interactions between factors
- determining the nature and magnitude of significant factors on performance
- having a high degree of statistical confidence in the results
- building a model which can be used to make predictions and find optimum operating conditions



The course takes participants from the high-level business, product or service issue to be addressed, through planning the experiment to collection and analysis of the data and on to the interpretation of the results and translating them into conclusions for the organisation.

A hands-on experiment completes the session, giving participants the opportunity to put their newly acquired skills into action.

### Who is the programme for?

Anyone needing to improve process performance by identifying the cause and effect relationships that exist between process inputs and outputs will benefit from this course. Scientists, engineers, chemists, technicians, and Lean Six Sigma practitioners in fields such as

manufacturing, product and process design, pharmaceuticals, health care, and the service sector will learn techniques that they can put into immediate use after the training.

## Learning Outcomes

### Outcomes for your Organisation

Design of Experiments provides an efficient best practice approach for building deep understanding of your process or product. It promotes team working and organisational learning.

### Outcomes for Your Personal Development

DoE is an interesting topic to learn and a very satisfying technique to apply. You will find that the concepts and thinking will give you new perspectives on dealing with many of the problems you deal with on a daily basis.

## Course Content

- Introduction to Design of Experiments
- 2-Level Full Factorial Experiments
- Factor and level selection
- Blocking, randomising, replication
- Designing the experiment with Minitab
- Analysing a Designed Experiment
- Effects Plots
- Cube Plots
- Pareto of Effects
- Fractional Factorial Experiments
- Estimating effects, understanding interactions
- Verifying assumptions
- Defining and selecting the best model
- Using the Minitab optimizer function
- Verification runs
- Planning and Preparing for a Designed Experiment
- Hands-on exercise

## Prerequisites

Those planning to attend should have at least a basic understanding of statistical principles (normal distribution, p-values, simple hypothesis testing). If these topics need to be taught or refreshed, this can be planned into the session.

## Support Pack

Each delegate will receive a printed and pdf copy of the training materials.