

# ADVANCED DESIGN OF EXPERIMENTS



## Introduction

The Advanced Design of Experiment Course aims to provide practicing engineers, chemists and managers with a set of tools to systematically improve product design and processes. Particular emphasis is placed on techniques of efficient data collection and analysis using examples and case studies rather than theoretical presentation. Engineers, chemists, and managers will be imparted with the skills of practical statistical tools for process optimisation, variance reduction and yield improvement.

The importance of Advanced Design of Experiment is demonstrated by the inclusion as one of the quality requirement of QS 9000 and the most powerful tool for the Six Sigma Black Belt Training. Millions of dollars have been saved through the efficient application of this tool. This course helps them to deal with the continuous need to optimise product design and process efficiency, in order to stay ahead in competitive markets.

## Objectives

This course will enable the participants to:

- provide means for tackling problems with long-term solutions.
- improve quality of products through optimising the variables.
- reduce material waste due to frequent rejects on the product resulting from quality problems.
- increase productivity by reducing quality problems.
- reduce the cost of production due to ability to detect quality problems faster.
- incorporate the philosophy of Total Quality Management through "Do it right the first time and every time".
- provide a clear picture of process optimisation.
- enhance staff morale through improving quality of the products by scientific means.

## Duration

2 days | 9am – 5pm | 14 hours

## Who should attend

This course is suitable for technical professionals as well as chemical professionals such as managers, engineers, engineering assistants and chemists involved in design, development, production, manufacturing, quality, and maintenance of the product.

## Entry Requirement

Participants should have basic knowledge of statistics and Design of Experiment.



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## Course Contents

### Review of Design of Experiment (DOE)

- Revision of simple Design of Experiment.
- Linkage of DOE to Advanced DOE Experiment.

### Efficient Screening Designs

- Fast screening of factors.
- Fractional factorial designs.
- Confounding analysis.
- Full analysis of  $\frac{1}{2}$  fraction.

### Multiple Regression Systems

- Linear regression.
- Sum of squares (SS) and F-statistics.
- Multiple Regression.
- Analysis of Variance (ANOVA) and R-square.

### Advanced Optimisation Studies

- Production optimisation through experimentation.
- Response Surface Methodology.
- Method of steepest ascent.
- Calculation of response.
- Progress along the path and overshoot.

### Case Studies

## Course Fees

Member: S\$469.80  
Non-Member: S\$502.20  
*Registration Fee of S\$17.28 apply*  
*SDF funding & SkillsFuture applicable*  
*All fees stated are inclusive of 8% GST*

## Award of Certificate

Certificate of Completion will be issued to participants who have attended at least 75% of the course.



Please refer to this URL  
<https://www.sqi.org.sg/courses/>  
or QR Code for soft copy  
and updated training schedule

## Membership Application

Register membership online at  
**[www.sqi.org.sg/membership-join/](http://www.sqi.org.sg/membership-join/)**  
or contact us to get the membership  
application form.

Membership Categories:

- ~ Organisation membership
- ~ Individual membership

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