



CONTINUING EDUCATION

Design of Experiments (DOE II)

CEQAL 521

Enhance your knowledge of DOE and expand your ability to apply it with the advanced set of tools provided in this course. Advanced tools and methods such as mirror image designs, ANOVA, blocking, mixtures designs, evolutionary operation and response surface methodology are covered. A DOE workshop is used to reinforce the key concepts.

- Who Should Attend:** Individuals who wish to identify and manage important process variables as well as their effect on quality and productivity improvement.
- Prerequisite:** A practical understanding of elementary applied statistics and a basic background in DOE are important. This seminar will build upon topics presented in the seminar, Design of Experiments I.
- CEU's Credit:** 3.2
- Duration:** 32 Hours – 4-day course
- Course Content:**
- Introduction**
 - Fundamental Concepts
 - Planning the Experiment**
 - The Process of Planning an Experiment
 - DOE Planning Worksheet
 - Screening Important Factors**
 - Review of Fractional Factorial Designs
 - Choosing Resolution
 - Defining Alias Structure
 - Analyzing Unreplicated Designs**
 - Graphical Methods
 - Estimating Standard Error of Effects
 - Calculating a Pseudo-Standard Error

Knowledge-Building Through Sequential Experimentation

- Options for Follow-up to the Screening Experiment
- Mirror Image Designs
- Assembly of Screening and Follow-up Designs

Model Building

- Mathematical Models for Process Optimizing
- Checking Model Validity

Using ANOVA to Determine Important Factors

- Analysis of Two-Level Designs
- Analysis of Multi-Level Designs
- Introduction to Multiple Comparisons

Designing Experiments When Randomization is Restricted

- When to use Blocking
- Standard Blocking Designs
- Split-Plot Designs
- Relationships to Taguchi Designs with “Noise Factors”

Experimenting with Nested Factors

- Recognizing Situations with Nested Design
- Analyzing the Nested Design

Handling Messy Data

- Recognizing Messy Data
- Avoiding Messy Data
- Analyzing Experiments with Missing Responses

Evolutionary Operation

- In-Process Optimization

Optimizing a Process with Experimental Design

- Using the Path of Steepest Ascent Approach
- Response Surface Designs Including Central Composite
- Group Simulation Exercise

Each participant will receive a comprehensive manual and a Certificate of Completion at the close of the seminar.