

# Design of Experiments

## **SECTION 1**     *INTRODUCTION TO DESIGN OF EXPERIMENT*

## **SECTION 2**     *HYPOTHESIS TESTING*

One sample tests

- Test of mean, Z and t tests
- Test of Variance,  $\chi^2$  tests

Two sample tests

- Test of mean, Z and t tests
- Test of Variance, F tests

### *BASIC ANALYSIS OF VARIANCE (ANOVA)*

- Assumptions in ANOVA
- Application of ANOVA

## **SECTION 3**     *DESIGN OF EXPERIMENT*

General

- Conventional approach versus proper Design
- Terms and definitions use in DOE

One Factor Design

- Complete Randomize Design
- Complete Randomized Block Design

Steps in conduction DOE

## **SECTION 4**      *MODELING DESIGNS*

### Full Factorial Design

- Design Matrix of 2 level and 3 level design
- Full Factorial application
- Data analysis and modeling

### Fraction Factorial Design

- Flexibility of Fractional Factorial design for screening and modeling
- Fractional Design application and analysis

## **SECTION 5**      *RESPONSE SURFACE METHODOLOGY*

- "Good" response surface designs
- RSM steps by steps

## **SECTION 6**      *BUILDING AND ANALYZING CCDs*

- Customized CCDs
- Model reduction

## **SECTION 7**      *RESPONSE SURFACE OPTIMIZATION*

## **SECTION 8**      *RESPONSE SURFACE DESIGNS*

### Box-Behnken designs

- Response transformation