

Statistical Applications & Data Analysis in Business and Industry: Part II

This course is a continuation of *Statistical Applications and Data Analysis I* course. The course will concentrate on inferential statistics and analytical methods for decision making. The standard statistical techniques of parameter estimation and hypothesis testing along with other modeling techniques will be discussed. These techniques are the underlying basis for much of the methodology of statistical quality control. Upon completion of this course, one should be able to:

- recognize the techniques of statistical inference, that is, how the information contained in a sample can be used to draw conclusions about the population from which the sample was taken
- understand the sampling, sampling distributions and their importance
- understand how a probability distribution is used to describe or model some quality characteristic, such as, a critical dimension of a product or the fraction defective of a process, and how the parameters are estimated from the sample data
- analyze sample data to determine whether they support or fail to support a hypothesis about a population parameter
- use the analysis of variance (ANOVA) technique to analyze data taken from multiple populations
- recognize the importance of Design of Experiments (DOE), and how the experimental design methodology is often key to overall product success especially at the earliest stage of development cycle, where new products are designed, existing product designs improved, and processes optimized
- apply the techniques of regression and correlation analysis in modeling and data analysis
- recognize the use and importance of statistical techniques (discussed in this and previous course) in quality control, and

Use computer software to analyze and model above problems.