Course Description
To maintain a competitive edge, manufacturers bring products to the market that meet or exceed customer needs. In developing and manufacturing these products, scientists are able to manipulate different parameters to produce goods that meet those customer aims while reducing the performance degradation in the users’ hands. Scientists use statistical methods to help determine what optimal setting the parameters (variables) should be at to achieve customer requirements.

This course will start with an introduction to the scientific method and good practices in experimental design. It will cover a review of point estimation, confidence intervals and hypothesis testing material covered in an introductory statistics course. It will proceed to cover the different experimental designs (Completely Randomized Design, Full Factorial, Central Composite Design, $2^k$, Fractional Factorial, Screening Designs). The analysis of the data from each design will also be covered using R, a computer software package.

Learning Objectives
After taking this course the student will be able to:
• Explain benefits of sound design of experiments
• Explain different types of experimental design
• Design and analyze different types of experiments
• Use computer software to achieve the preceding objective
• Communicate the statistical results from analysis

Applicable in many fields including engineering, business, marketing, and chemistry, among others.

Prerequisite
Introductory statistics course such as STAT – 212.

Instructor
Javier Bautista