

# Invitation from ASQ Palomar Section September 13, 2023 Virtual Meeting

**DATE:**

Wednesday,  
September 13, 2023

This is a virtual/Zoom meeting

**Time:**

6:30 pm – 8:00 PDT  
(opens for networking at 6:00 pm)

(check website to confirm times)

**Cost: Free for ASQ members  
and non-members**

Join Zoom Meeting:  
<http://us06web.zoom.us/j/81164297444>

No registration required; just use the Zoom link. You will be asked to enter your name and e-mail address in the chat to earn RUs for attending.

Any questions? Send an [email](#).

**Attendance at this meeting earns RUs toward ASQ recertification.**

For more information about Palomar ASQ Section 708, click [here](#).

For more information about our local Columbia Basin ASQ section and future upcoming events: [www.asq614.org/](http://www.asq614.org/)

## Design of Experiments: Theory and Practice



**N.T. “Bala” Balakrishnan, MBA, CQE, CSSBB  
Professor, Cal Poly Pomona**

The design of experiments, also known as experiment design or experimental design, is the design of any task that aims to describe and explain the variation of information under conditions that are hypothesized to reflect the variation.

Statistical studies are either experimental or observational. In an experimental study, an experiment is conducted to generate data. This begins with identifying a variable of interest. Then one or more variables thought to be related are identified and controlled, and data are collected about those variables that influence the variable of interest.

In an observational study, the data are usually obtained through sample surveys and not a controlled experiment. Rigorous controls associated with an experimental study are often not possible; in some cases, we may only be able to observe the effects.

There are three types of experimental designs: completely randomized design, randomized block design, and factorial experiment. For each design, a statistical procedure called Analysis of Variance (ANOVA) can be used to analyze the data from an observational study. The variable for which a value is measured or observed in ANOVA is the dependent (response) variable and could be a quantitative variable.

A variable that is observed or controlled for the purpose of determining its effect on the dependent variable is the independent variable. This can be qualitative or quantitative. The independent variable is referred to as a factor, and one or more factors may be involved in the study. The experiment may involve different factor levels; each referred to as a treatment.

This presentation will go into more detail about the methodology of design of experiments and how this can be used in successful implementation of a Quality program.

*About the speaker: Professor N.T. “Bala” Balakrishnan has over 40 years’ experience in Industry and Academia, having held several positions as Quality Manager, Manufacturing Engineering Manager in companies including United Technologies, IBM, and 3M Standard Abrasives. He is currently a professor in the Technology & Operations Department, College of Business Administration, California State Polytechnic University, Pomona.*

*Bala has led Kaizen teams and implemented continuous improvement programs, used Design of Experiments to improve processes, conducted process capability studies, reduced cost of quality, and improved effectiveness of operations using Quality Management software.*