

Knoxville, Tennessee

Knoxville was established in 1792 and was named after Henry Knox, President Washington's War Secretary. It is headquarters of The Tennessee Valley Authority. The Sunsphere was built for the 1982 World's Fair.

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Register

<http://www.spcforwood.com>

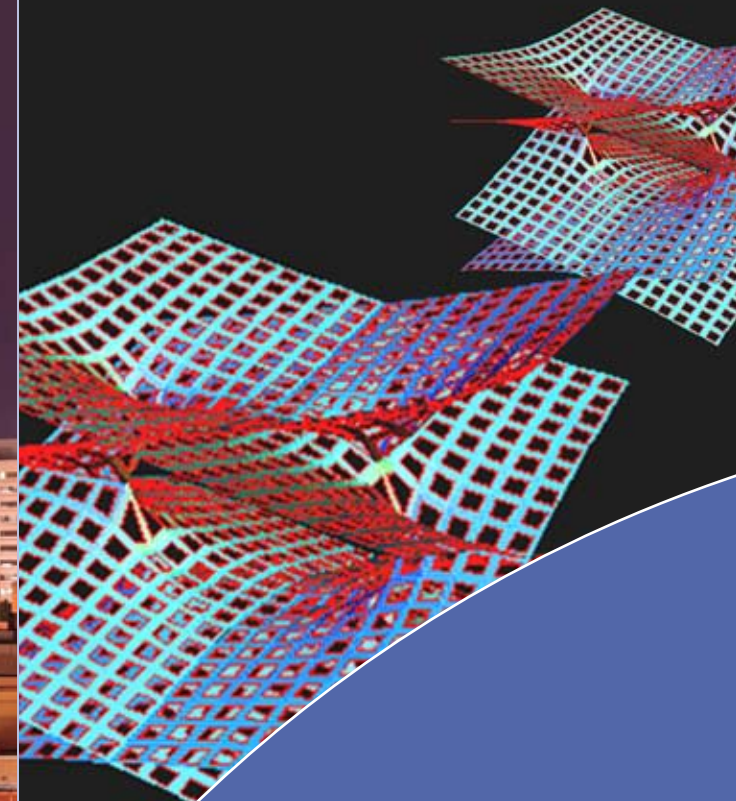
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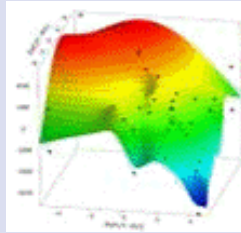


Design of Experiments for the Bio-Based Products Industry



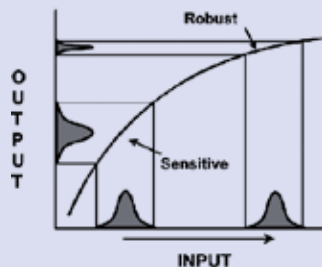
Design of Experiments

Statistical design of experiments (DOE) refers to a process of planning an experiment so that appropriate data can be analyzed using statistical methods resulting in valid and objective conclusions. An experiment is a test or a series of tests in which purposeful changes are made to input variables of a process or system so that we may observe and identify the reasons for changes in an output response. The objective of experimentation is to develop a robust product or process. Key assumptions of DOE and fundamentals of a planned experiment are taught in the course. Emphasis is given to minimizing the influence of “nuisance” factors during individual experimentation.



Taguchi's "Robust Product Design"

Robust design is an engineering methodology for improving productivity so that high-quality products can be produced quickly and at a low cost. The idea behind robust design is to improve the quality of a product by minimizing the effects of variation without eliminating the causes since they are too difficult or too expensive to control. Taguchi's method is a quality design method that is instituted at both the product and process design stage to improve product manufacturability and reliability by making products insensitive to environmental conditions and component variations. The end result is a robust product, a product that has minimum sensitivity to variations in uncontrollable factors. Taguchi's L4, L8, and L9 designs are taught with the concept of inner and outer arrays.



Instructor



Tim Young
Associate Professor

PhD NR (Statistics) University of TN
MS Statistics, (Oper. Res.) University of TN
MS Forest Economics (Statistics), University of WI
BS Forestry, University of WI

Member
American Statistical Association
American Society of Quality
Forest Product Society

Tim has 17 years experience in the wood products industry;
4 years experience with private sector in MDF manufacture.

He has taught SPC course since 2001

Key Concepts Taught

Modern Design and Fundamentals

- Key Assumptions

Factorial Designs

2^k Screening Designs

- Yates Notation
- Orthogonality

Randomized Complete Block Design

- Taguchi's Parameter Design Approach
- Signal-to-Noise Ratios
- Quality Counter measures against
- Noise and Uncontrollable Variation

Philosophy of Blocking in Experimentation

Fractional Factorials

Response Surface Designs

- Central Composite Designs
- Box-Behnken Design

Nested and Split-plot designs

Regression Analysis

Regression Trees

Course Description

The Forest Products Center (FPC) at The University of Tennessee holds this training course which provides a comprehensive overview of the principles of designed experimentation in a manufacturing setting. Robust product design is also emphasized in the course. Candidates participate in hands on activities and work on PC-based exercises using real world process data. The course has easy to understand text which helps ensure a comfortable pace and fun learning experience benefiting both the student and respective employer. The FPC offers this program to maintain a focus providing leading practical education for the bio-based products industry.

The course requires no prior knowledge of designed experimentation. Knowledge of basic statistics and PC/laptop usage is helpful. The course is taught in two Sessions with Session 1 to be held on December 2, 3, and 4, 2008. The dates for Session 2 are determined at the end of Session 1. The course is limited to 8 candidates. The fee of \$3,200 covers lodging, food, registration, local transportation. "The University of Tennessee, Division of Outreach & Continuing Education will award 4.0 CEU to each participant, who successfully completes Design of Experiments for the Bio-Based Products Industry.

Designed For

- Plant Managers
- Production Managers
- Technical Directors
- Quality Control Managers
- R&D Scientists