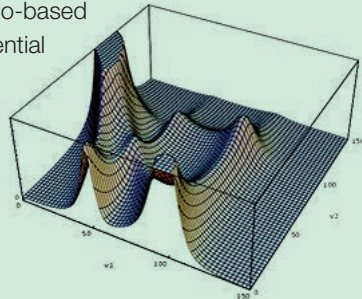


ADVANCED SPC

Advanced Statistical Process Control (SPC) applies SPC methods to advanced data applications that occur during manufacture. The instruction is “practical” in that it focuses on immediate applications of Advanced SPC for variation reduction of key process variables and product attributes, e.g., weight, thickness, resin usage, line speed, time-to-final thickness, etc.

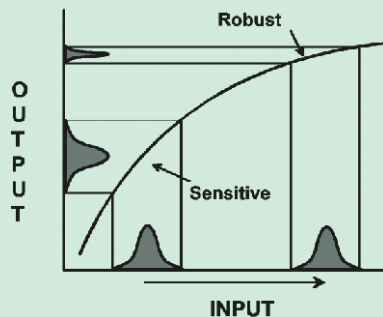
DATA MINING

A driving force in the rapidly changing global economy is the power of information technology. Information and computing technologies have changed modern manufacturing. Data mining (DM) is the process of automatically searching large volumes of data for patterns. We believe that rapid growth in DM applications in the bio-based products industry is essential for cost savings and business success.



ROBUST PRODUCT DESIGN

The idea behind robust product design is to improve the quality of a product by minimizing the effects of uncontrollable variation (e.g., ambient temperature, humidity, operators, etc.). Taguchi's design arrays and the “signal-to-noise” ratios are taught.



INSTRUCTOR



TIM YOUNG
Professor

PhD NR (Statistics) The University of Tennessee
MS Statistics, (Oper. Res.) The University of Tennessee
MS Forest Economics (Statistics), University of Wisconsin
BS Forestry, University of Wisconsin

Member
American Statistical Association
American Society of Quality
Forest Product Society

KEY CONCEPTS TAUGHT

TOPICS IN ADVANCED SPC

- AUTOCORRELATION
- EXPONENTIALLY WEIGHTED MOVING AVERAGE (EWMA)
- EWMA CONTROL CHARTS
- MULTIVARIATE CONTROL CHARTS
- CONTROL CHART FOR COEFFICIENT OF VARIATION
- PROBABILITY DENSITY FUNCTIONS (PDF)
- CONFIDENCE INTERVALS (CI)
- SIGNIFICANCE TESTING
- SAMPLING
- DATA QUALITY
- REGRESSION ANALYSIS
- DECISION TREES (DT)
- DATA MINING (DM)
 - NEURAL NETWORKS (NN)
 - GENETIC ALGORITHMS (GA) & (GANN)
 - PRINCIPAL COMPONENTS ANALYSIS
 - CROSS VALIDATION
- TAGUCHI'S ROBUST PRODUCT DESIGN

COURSE DESCRIPTION

The Center for Renewable Carbon (CRC) at The University of Tennessee holds this training course which provides a comprehensive overview of the principles and analysis techniques for advanced statistical process control, probability density functions, confidence intervals, significance testing, sampling, regression analysis, decision trees, and data mining methods. Candidates participate in hands on activities and work on PC-based exercises on real world process data for their company. The course has easy to understand texts which helps ensure a comfortable pace and a fun learning experience benefiting both the student and respective employer. The CRC offers this program to maintain a strength of providing leading practical education for the bio-based products industry.

The course requires some prior knowledge of SPC, statistics, and PC/laptop usage. The course is taught over 4 days **May 10-13, 2022**. The course is limited to 8 candidates. The fee of \$3,250 covers lodging, food, registration, local transportation, 4 books and laptop usage. The University of Tennessee, Division of Outreach & Continuing Education will award 3.2 CEU's to each participant, who successfully completes this course. It can also be taken for 3 undergraduate credit hours and 2 graduate credit hours at UT for an additional tuition fee.

DESIGNED FOR

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