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.
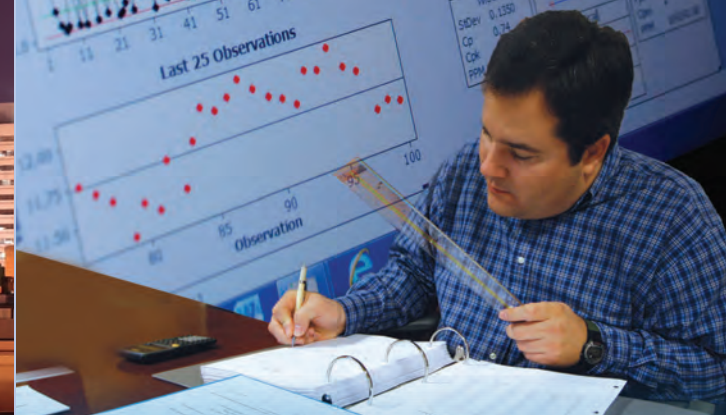
VISIT WWW.KNOXVILLE.ORG

REGISTER
www.spc4lean.com

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CRC
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The University of Tennessee Institute of Agriculture

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PROCESS ANALYTICS STATISTICAL PROCESS CONTROL AND LEAN METHODS

JANUARY 25-27, 2022

THE UNIVERSITY of TENNESSEE
KNOXVILLE

**AgResearch**

SPC AND VARIATION REDUCTION

Statistical Process Control (SPC) is a general term that applies statistical methods to reduce process and product variation. The goal of SPC is "variation reduction" of all key input process parameters which result in "variation reduction" of final product outputs (i.e., products that are robust to process noise). Variation reduction leads to target reduction and substantial cost savings. How will you improve a process without first quantifying its variation?

LEAN SYSTEMS IN MANUFACTURING

"Lean Thinking" is a quality and productivity improvement methodology based on the Toyota Production Systems (TPS) model which is based on the relentless pursuit of the perfect manufacturing process through waste elimination in the value stream resulting in productivity gain and improvement of speed and flow. While "Lean" serves to eliminate waste, the application of statistical methods reduces process variability in striving for perfection. When combined, the result is a methodology that serves to improve processes, eliminate product or process defects and to reduce cycle times and accelerate processes.

COSTING VARIATION TAGUCHI LOSS FUNCTION

Manufacturers have to run higher than necessary targets given the variation of the process. The Taguchi Loss Function is a capstone concept of the course in quantifying the cost of variation.
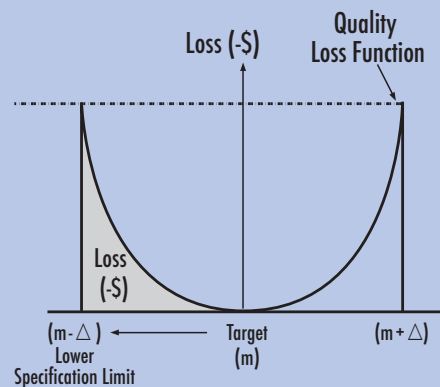
INSTRUCTOR

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

Tim has 20 years experience in the bio-based products industry;
4 years experience with in MDF manufacture in the private sector.

KEY CONCEPTS TAUGHT

- FOUNDATIONS FOR VARIATION REDUCTION
- LINKING KEY PROCESS VARIABLES WITH CRITICAL PRODUCT ATTRIBUTE
- QUANTIFYING VARIATION
- SAMPLING MANUFACTURING PROCESSES
- CONTROL CHARTS FOR MEASUREMENT AND ATTRIBUTE DATA
- CAPABILITY ANALYSIS
- DESCRIPTIVE STATISTICS/HISTOGRAMS
- TAGUCHI LOSS FUNCTION
- COMPONENTS OF VARIANCE
- CORRELATION ANALYSIS
- GAGE R&R
- CONTROL CHARTS FOR AUTOCORRELATED DATA/DIFFERENCE CHARTS
- FMEA
- PROCESS FLOW MAPPING/VALUE STREAM MAPPING
- JAPANESE PRINCIPLE OF 5-S
- SIPOC DIAGRAMS
- SMED - OVERALL EQUIPMENT EFFECTIVENESS (OEE)
- TAKT TIME - WORK CELLS
- JIDOKA
- KANBAN

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 effective statistical process control and lean systems applications. Candidates participate in hands on activities and develop presentations based on real world process scenarios in their company. The course has an easy to understand text which helps ensure a comfortable pace and fun learning experience benefiting b oth t he student and respective employer. The CRC offers this program to maintain a focus on providing leading practical education for the bio-based manufacturers.

The course requires no prior knowledge of SPC, statistics, or Lean Thinking. The course is taught in two Sessions with Session 1 to be held on JAN 25-27, 2022 (Session 1). The dates for Session 2 are determined at the end of Session 1. The course is limited to 16 candidates. The fee of $3,100 covers lodging, food, registration and local transportation for both sessions. The University of Tennessee, Division of Outreach & Continuing Education will award 4.0 CEU's to each participant, who successfully completes this course. It can also be taken for 3 undergraduate and 3 graduate credit hours at UT for an additional tuition fee.

DESIGNED FOR
- Plant Managers
- Production Managers
- Technical Directors
- Quality Control Managers
- R&D Scientists
- Supervisors
- Operators