

The University of Tennessee School of Natural Resources (SNR)

'Data Science Institute for Machine Learning and AI' (DSIMLA)

DSIMLA aims to promote and advance education and research in data science, machine learning, and AI for companies for the forest products industry. The Institute seeks to enhance the education and research of data science, machine learning, and AI for forest business and management companies. The goal of the Institute is to assist companies in learning, adapting, and effectively implementing the latest data science, machine learning, and AI technologies to optimize processes, leading to improved efficiency, utilization, energy savings, and cost reduction. The Institute will function as an expansion of a company's innovation group by providing access to the most current technologies in the rapidly evolving field of data science, machine learning, and AI.



The University of Tennessee, Knoxville is a public institution that was founded in 1794. It has a total undergraduate enrollment of 27,039 (fall 2022), its setting is city, and the campus size is 910 acres. It utilizes a semester-based academic calendar. University of Tennessee, Knoxville's ranking in the 2024 edition of Best Colleges is National Universities, #105. Its in-state tuition and fees are \$13,244; out-of-state tuition and fees are \$31,434. The University of Tennessee, Knoxville is a public research institution located in one of the state's largest cities, and is the flagship campus for the state school.

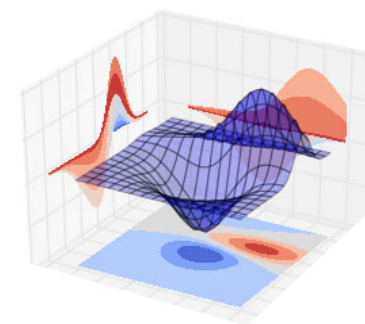
The School of Natural Resources is located in the at the University of Tennessee, Institute of Agriculture. The new MS Forest Business is open to students at UT and industry personnel willing to expand their education while working full-time, and will consist of a mostly virtual curriculum. The MS in Forest Business is a three-semester, non-thesis program that prepares students to assume leadership roles within forest industry in three separate tracks: Analytics & Data Science, Forestland Investment & Finance, and Logistics & Procurement.

'Design of Experiments' for Rapid Innovation

September 10-12, 2024

Offered by the

'Data Science Institute for
Machine Learning and AI'

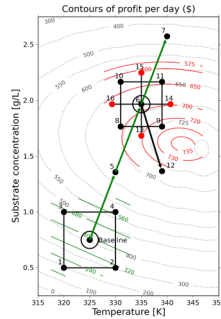


Instructor

Timothy M. Young, Ph.D.

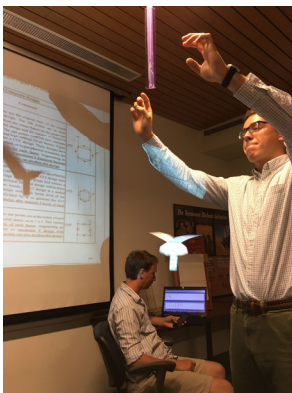
Course Goal

The goal of the course is to enhance the students' knowledge of applying modern statistical design concepts in the process and product innovation process. The techniques taught in the course will lead to robust process and product optimization.



Course Structure

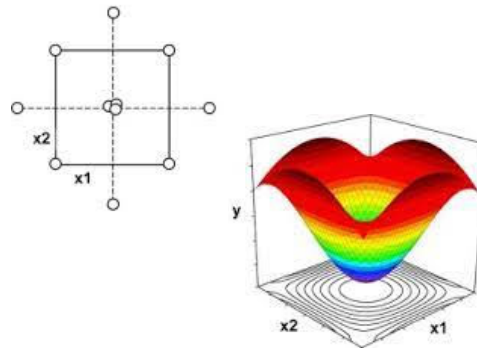
The course is taught in two separate 40-hour sessions in a relaxed classroom setting. Participants enjoy the small class size of 8 to 10 students. Students are required to bring a laptop with either JMP or Minitab software preloaded on the laptop. Session I is 2 ½ days and typically runs from a Tuesday morning at 8:30 am EST through Thursday, which concludes that day at 12 pm EST. Session II is scheduled by the class typically 8 to 10 weeks after the conclusion of Session I. Students enjoy the hands-on exercises such as the traditional 'paper helicopter experiments.'



Course Outline

- Concept of Modern Design
- Statistical Methods Review
- Hypothesis Testing Review
- General Linear Model (GLM)
- Analysis of Variance (ANOVA)
- Single Factorial Model
- Two Factorial Model
- Full Factorial Models
- ANCOVA
- 2^k Screening Designs
- Sample Size Determination
- Blocking in Designs
- Split-Plot Designs
- Nested Designs
- Fractional Factorial Designs
- Blocking in Fractional Factorials
- Taguchi Robust Product Design
- Response Surface Designs
 - Central Composite Designs
 - Box-Behnken Designs
- Mixture Designs

**This is a software based course and all exercises are done in JMP and Minitab software*



Course History

The course has been taught since 2008 to more than 50 companies and over 400 participants. This includes several in-house customized courses for companies.

4.0 CEU Credit Offering

The course is available for 4.0 CEU credits and 3 graduate or undergraduate credits within The University of Tennessee system. This course meets 3 required credit hours for the MS Forest Business degree. The fees for CEU credits are included in course fee of \$3,850.

2022 Graduation Class



Contact

Timothy M. Young, Ph.D.
University of Tennessee
School of Natural Resources
427 Plant Biotechnology Building
2505 E.J. Chapman Drive
Knoxville, TN 37996-4563
+01 865 356 1151

tmyoung1@utk.edu
<https://agdata.tennessee.edu/>

