

Design of Experiments Overview

Design of Experiments (DoE) is a strategic tool for the development and optimization of processes, where no theoretic model as a set of partial differential equations is available. Process-development is getting more and more inefficient in industries without knowledge in DoE. Despite of the Black-Box approach, this method will deliver a quantitative process model based on a comparable small number of runs. The model takes statistics into account and describes the uncertainty of the „process formula“ by confidence intervals. The impact of DoE on machine learning will also be addressed.

Topics day 1

- Black-Box process model within Design of Experiments (DoE)
- System analysis to fix responses, factors and factor ranges
- Models for statistical errors (Normal-Distribution, Weibull-Distribution, Binomial-Distribution)
- Mathematical Model (Taylor expansion as model for Black Box)
- Design space assumption
- D-optimal designs
- Space filling designs for simulation projects
- Choice of model order
- Sample size calculation
- Designs for sample projects from industries

Topics day 2

- Working steps for data analysis
- Background for fitting model („Regression Analysis“)
- Special aspects in analysing data from non DoE sources
- Reasons for data analysis formalism
- Example for data analysis (using projects of day 1)
- Design augmentation in case of unclear results
- Complex models with Gauss Process Regression

Topics day 3

- Tips & tricks
- Workshop: Design
- Workshop: Data analysis
- Final round and training evaluation

Please note

Please bring along your notebook (Windows, IOS). The statistical software Cornerstone will be installed at the beginning of the training.

This offer cannot be credited as a qualification measure at the Department of Mechanical Engineering. However you are welcome to participate.

This workshop is planned to be held in person. Depending on the pandemic situation, the workshop might however be held online.

WHEN

03.11.2021	09:00 - 17:00
04.11.2021	09:00 - 17:00
05.11.2021	09:00 - 13:00

[BOOK HERE](#)