

Course: Process Data Analysis

credits: 4

Course code WBVH18PDA
Name Process Data Analysis
Study year 2019-2020
ECTS credits 4
Language English
Coordinator M.E.F. Apol

Modes of delivery Education
Assessments Process Data Analysis - Assignment

Learning outcomes

After completing this module, the successful student is able to:

- perform and interpret basic statistical tests for averages, proportions and variances (i.e., t-tests, binomial z-tests, and chi-square and F-tests) using Excel and/or Minitab
- perform and interpret several ANOVA analyses (1-way, 2-way with fixed and random effects) using Excel and/or Minitab
- perform and interpret correlations, correlation functions and Principal Component Analysis using Minitab
- perform and interpret linear and nonlinear regression of experimental data, including model selection and interpolation, using Excel and/or Minitab
- perform and interpret categorical data analyses (1-way and 2-way chi-squared tests, logistic regression) using Excel and/or Minitab
- utilize and interpret statistical tools and indices for process control (i.e., Shewhart charts, process capability indices) using Excel and/or Minitab

Content

Making process plants more energy efficient requires identifying, modifying and checking some key process variables. The module Process Data Analysis deals with statistical analysis of complex, dynamical systems, using advanced methods such as multivariate data analysis, e.g. multivariate regression, Principal Component Analysis (PCA) and Analysis of Variance (ANOVA). The basic statistical concepts and generalization to more complex situations, and principles of various software packages (Excel and Minitab) will be reviewed. Finally, an introduction to Statistical Process Control (SPC) is given.

Included in programme(s)

Minor Energy Efficiency in the Process Industry
Exchange Energy Efficiency in the Process Industry (autumn)

School(s)

Institute of Engineering