

ODIN Spring Courses 2017



Design of Experiments

Week 19: Wednesday to Thursday, May 10th to May 11th, 2017.

Background: Proper analysis of data and efficient planning of experiment is (or should be!) a part of every scientist's toolbox. In this short course, an outline of different terms within Design of experiments and the theory behind when to use what are given. After a reminder on the basics of statistics and populations required for experimental planning (sampling, univariate linear regression, etc.) we will look at the setup and analysis of designed experiments and statistical inference from designed data (Designs, ANOVA, etc.). Furthermore we will discuss efficient planning and performance of fixed pattern and sequential optimizations techniques useful in e.g. yield optimization in production processes or instrumental optimization in analytical chemistry procedures.

Audience: The course is intended for people handling problems where using Design of experiments can be an advantage when setting up the experiments or people who have general interest in knowing how to setup and use experimental designs. Simple mathematical and statistical terms will be used in the course and the theory will be accompanied by computer exercises.

Software: JMP (SAS) or MODDE (Umetrics) can be used during exercises.

Teacher: Frans van den Berg.

Location: University of Copenhagen, Frederiksberg Campus.

The course is taking place from 9 AM to 4 PM both days. Lunch and coffee will be included. If you have special dietary needs, please let us know by enrollment. Lectures and notes are in English.

Please note that a minimum of 8 participants must sign up for this course to take place.

This course is *not* limited to three persons per membership. For this occasion only, we allow more participants. We will aim at no more than 30 students in total. Enroll to Rasmus Bro (rb@food.ku.dk) May 1st, 2017 at the latest. Enrollment will be accepted only through your ODIN representative. Please provide e-mail address of course participants so last minute details can be provided. Cancellations must be made no later than three working days in advance or a fee of 500 DKK will be charged.

Basic Chemometrics

Week 20: Wednesday to Thursday, May 17th to May 18th, 2017.

Background: Chemometrics (or multivariate data analysis) may be used to solve problems involving large amounts of data. This is relevant within fields such as development, research, process monitoring and control, and laboratory analysis. In these fields, the use of single variables is often inadequate to describe, differentiate or classify objects/samples. Looking at more variables at a time ensures that interactions, patterns and correlations are taken into consideration. Combined with superior data visualization, chemometrics is a needed tool for proper data analysis.

As participant you will be introduced to the multivariate way of thinking and learn how to explore your data properly and how to set up a multivariate calibration/regression model. The course is a mixture of lectures and exercises. In the exercises, you will use the chemometrics tools and from this be able to navigate through the raw data to interpretation of model parameters on your own. Exercises will be performed in groups of two. During this course you will NOT be able to work with your own data.

Audience: The course is intended for people handling problems where chemometrics may be applied or people who have a general interest in learning more about chemometrics and its applications. Some mathematical and statistical expressions will be used in the course and a variety of data (e.g. sensory and spectroscopic data) will be used as examples.

Software: LatentiX will be used during exercises.

Teachers: Marta Bevilacqua and Rasmus Bro

Location: University of Copenhagen, Frederiksberg Campus

The course is taking place from 9 AM to 5 PM both days. Lunch and coffee will be included. If you have special dietary needs, please let us know by enrollment. Lectures and notes are in English.

This course is *not* limited to three persons per membership. For this occasion only, we allow more participants. We will aim at no more than 30 students in total. Enroll to Rasmus Bro (rb@food.ku.dk) May 1st, 2017 at the latest. Please provide e-mail address of course participants so last minute details may be provided. Cancellations must be made no later than four days in advance or a fee of 500 DKK will be charged.

Processing of untargeted GC-MS data.

Week 23: Wednesday, June 6th, 2017.

Background: Complex samples analyzed with full scan untargeted GC-MS can provide a wealth of information about the samples. The aim of this course is to make the participants familiar with a number of methods that can be used to optimally extract information from the data obtained from untargeted GC-MS analysis. The participant will learn about different types of quality control samples, processing of raw data, and how to actively use the quality control samples in an optimal way to extract as much information as possible about compounds and samples.

During the course, the participants will be introduced to a new data processing tool (PARADISE) which can be used to extract pure spectra of co-eluting compounds as well as relative concentrations of these.

The course will provide the participants with the necessary theoretical background knowledge to:

- Design untargeted GC-MS experiments
- Include necessary samples to do optimal quality control
- Apply PARAFAC2 for processing raw GC-MS data
- Evaluate GC-MS results and remove noise/uninformative compounds from the obtained dataset

Audience: The course is of importance to scientists and technologists working e.g. in the food, biotech and pharmaceutical industry engaged in studies involving untargeted GC-MS or wishing to learn more about designing and data processing of untargeted GC-MS. The course will provide an overview of the requirements and resources needed in order to implement the demonstrated techniques.

Teachers: Rasmus Bro

The course is taking place from 10 AM to 4 PM. Lunch and coffee will be included. If you have special dietary needs, please let us know by enrollment. Lectures and notes are in English.

This course is *not* limited to three persons per membership. For this occasion only, we allow more participants. Enroll to Rasmus Bro (rb@food.ku.dk) May 25th, 2017 at the latest. Please provide e-mail address of course participants so last minute details may be provided. Cancellations must be made no later than four days in advance or a fee of 500 DKK will be charged.

