Organization

Venue
The course will take place in Heidelberg at the University Campus ‘Im Neuenheimer Feld’.

Registration
Deadline for registration is December 24, 2020.

Course fee
The fee for the course is € 645; discounted rate for affiliated with a university € 430.

Cancellation
The cancellation policy is as follows: 100% refund for cancellations till December 30; 75% refund for cancellations between December 31 and January 6; no refund for cancellations after January 7, 2021.
Attendee substitutes may be made at any time.

Public Transport
Costs and schedule: www.vrn.de

Information
http://www.biometrie.uni-heidelberg.de/datascience

Concept and Contents
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Generalized Additive Models


Medical Data Science
Aims
Course participants will be able to:

- Understand the basic ideas behind generalized additive models and related approaches
- Perform their own analyses using the statistical language R
- Visualize and interpret the results

Course content
The course discusses modelling approaches that go beyond the well-known (generalized) linear model, e.g., because crucial assumptions such as linearity in the covariates are violated. In particular, the following topics will be covered:

- Polynomial functions of covariates
- Modeling using splines
- Smoothing and penalties
- Semi- and non-parametric modeling of covariates
- Statistical inference
- Implementation in R
- Generalized additive models in practice

Pre-requisites
The participants must have

- Basic knowledge of statistics and probability theory, including the classical linear model
- Basic knowledge in R

Schedule
**Thursday (14th of January)**
9:00 – 10:30 Introduction
11:00 – 12:30 Exercises
13:30 – 15:00 Smoothing and Penalties
15:30 – 17:00 Exercises

**Friday (15th of January)**
9:00 – 10:30 Generalized Additive Models
11:00 – 12:30 Exercises
13:30 – 15:00 Statistical Inference in GAMs
15:30 – 17:00 Exercises

**Saturday (16th of January)**
9:00 – 10:30 Alternatives to GAMs
11:00 – 12:30 Exercises

Number of Participants
The number of participants is limited to 20 per course.

Pre-requisite
Knowledge of mathematical principles including basic knowledge of probability theory.
Basic knowledge of the statistical programming software R is needed.

Course instructor
Prof. Dr. Jan Gertheiss,
Helmut Schmidt Universität/Universität der Bundeswehr Hamburg