The courses may take place in parts or as a whole online (virtual conferences) if in-classroom teaching is not possible.

**Registration**
Deadline for registration is January 13, 2022.

**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 January 12; 75% refund for cancellations between January 13 and January 26; no refund for cancellations after January 27, 2022.
Attendee substitutes may be made at any time.

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

**Concept and Contents**
University of Heidelberg
Institute of Medical Biometry and Informatics
Department of Medical Biometry
Im Neuenheimer Feld 130.3
69120 Heidelberg

**Contact**
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**Organization**
Simone Fomuki
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Aims

Course participants will be able to:
- Assess and validate a statistical (supervised) model
- Select an appropriate model for a supervised learning situation and relevant exploratory variables
- Conduct statistical (supervised learning) algorithms and to implement it in the statistical software R
- Interpret results of statistical models

Course content

The course will cover the following topics:
- Regularization methods for linear regression
- Model assessment and selection
- Neural networks
- Decision trees
- Random forests
- Bagging and boosting

Schedule (subject to change)

Thursday (03th February)
09:00 – 10:30 Model Assessment and Selection I
11:00 – 12:30 Model Assessment and Selection II
13:30 – 15:00 Regularized Regression methods I
15:30 – 17:00 Regularized Regression methods II

Friday (04th February)
08:00 – 09:30 Neural Networks and Deep Learning I
10:00 – 12:00 Neural Networks and Deep Learning II
13:00 – 14:30 Support Vector Machines I
15:00 – 16:30 Support Vector Machines II

Saturday (05th February)
09:00 – 10:30 Prototype methods
10:45 – 12:15 Tree based & ensemble methods I
12:45 – 14:15 Tree based & ensemble methods II

Number of Participants

The number of participants is limited to 25 per course.

Pre-requisite

Knowledge of mathematical principles including basic knowledge of probability theory.
Basic knowledge of the statistical programming software R is needed.
Basic understanding of regression modelling techniques.

Course instructors

Dr. Katharina Hees, Paul-Ehrlich Institut, Langen

Further lecturers

Dr. Lorenz Uhlmann, Novartis Basel
Prof. Dr. Schmid, Institut für Medizinische Biometrie, Informatik und Epidemiologie, Universitätsklinikum Bonn
Dr. Thomas Welchowski, Institut für Medizinische Biometrie, Informatik und Epidemiologie, Universitätsklinikum Bonn
Maximilian Pilz M.Sc., IMBl Heidelberg