

Module Handbook

TUK MODHB Homepage

Course WIW-KM-MNM-K-6

Multivariate and Nonlinear Models (2K, 3.0 LP)

Course Type

SWS	Type	Course Form	CP (Effort)	Presence-Time / Self-Study
2	K		3.0 CP	30 h 60 h
(2K)			3.0 CP	30 h 60 h

Basedata

SWS	2K
CP, Effort	3.0 CP = 90 h
Position of the semester	1 Sem. in WiSe
Level	[6] Master (General)
Language	[EN] English
Lecturers	Wendt, Oliver, Prof. Dr. (PROF DEPT: WIW) Hermes, Manuel (WMA DEPT: WIW)
Lifecycle-State	[NORM] Active

Notice

alte PO 2009: 3 LP, neue PO 2021: 4 LP

Contents

The lecture provides an overview of problems and state-of-the-art techniques of generalizing models from (small or large) data sets with known or unknown hypotheses regarding the underlying functional dependencies. Data sets from various application domains are analyzed and appropriate software tools introduced. Students will be able to work on an independent analysis on a self-chosen dataset to earn bonus points in a small group.

Methods covered:

- Data Analysis and Graphical Presentation
- Multivariate Linear Models
 - Multivariate analysis of variance
 - Multiple Regression
 - Factor Analysis
 - Multidimensional scaling
- Multivariate Nonlinear Models
 - Artificial Neural Networks
 - Kernel-based Estimators and Support Vector Machines

Literature

Hair, J.F. et al., Multivariate Data Analysis, 7th Edition, Pearson 2014

Christianini, N.; Shawe-Taylor, J.: An Introduction to Support Vector Machines and other kernel-based learning methods, Cambridge University Press 2013

Additionally, slides are made available that contain a list of complementary literature.

Requirements for attendance (informal)

None

Requirements for attendance (formal)

None

References to Course [WIW-KM-MNM-K-6]

Module	Name	Context
[WIW-KM-QTM-M-6]	Quantitative Methods	WP: Obligation to choose 2K, 3.0 LP