

Department	07 Computer Science and Mathematics
Course title	Applied Multivariate Analysis Methods
Course number	
Hours per week (SWS)	4
Number of ECTS credits	5
Course objective	<p>The students:</p> <ul style="list-style-type: none"> - can theoretically explain common multivariate statistical analysis methods, - can apply these methods in specific analysis projects and interpret and discuss the results and develop at least one specific method independently. <p>Professional and methodological skills: The students ...</p> <ul style="list-style-type: none"> - plan at least one data analysis project and carry it out using multivariate statistical analysis methods, carry out data preparation, - carry out the data preparation - analyze data using descriptive and explorative approaches, - can identify specific project requirements and issues, - can select and compare one or more suitable analysis methods for a given problem and evaluate the extent to which analysis methods are suitable for a specific project, - compare and evaluate the extent to which analysis methods are suitable for a specific project, - check the model assumptions for the available data and validate the model, - evaluate, interpret and discuss the results adequately and implement the analysis in suitable software (e.g. R or Python). <p>Interdisciplinary skills: The students ...</p> <ul style="list-style-type: none"> - can communicate the methods used and the results obtained to third parties in a comprehensible manner and discuss them critically, - can describe and assess the dangers of an unreflected use of multivariate methods in practice (e.g. model credibility, black box models, bias) and - can explain ethical and legal issues when using multivariate methods in practice (e.g. social scoring, recommender systems, data protection).
Prerequisites	Sound knowledge of probability theory and statistics at Bachelor's level
Recommended reading	
Teaching methods	
Assessment methods	
Language of instruction	English
Name of lecturer	Mila Stillman
Email	mila.stillman@hm.edu
Link	
Course content	<p>Approaches for explorative data analysis like cluster analysis, main component analysis, factor analysis and multi-dimensional scaling</p> <p>Linear models: linear regression, logistic and generalized regression, semi-parametric and non-parametric additive regression models, analysis of variance, analysis of covariance (optional)</p> <p>Other methods such as discriminant analysis, canonical correlation analysis, correspondence analysis</p> <p>Explicit discussion of ethical and legal aspects when using multivariate methods in practice</p>

Remarks