

Department	07 Computer Science and Mathematics
Course title	Analysis and Decision
Course number	
Hours per week (SWS)	4
Number of ECTS credits	5
Course objective	<p>Students should develop a basic understanding of data analysis and decision theory. They will be able to assess their potential for use in an operational context and support their application in the company.</p> <p>PROFESSIONAL & METHODOLOGICAL COMPETENCE</p> <p>Data Analysis</p> <ul style="list-style-type: none">- Students acquire knowledge of the phases involved in analyzing pre-business data. They are familiar with different data categories and can assess their potential uses- Students have basic knowledge of the necessity of data preparation in the context of data analysis.- Students acquire knowledge of methods from the field of machine learning (in the sense of unsupervised, supervised and reinforcement learning) and have the ability to select and apply algorithms appropriate to the problem.- Students have a basic understanding of how neural networks work. They can classify terms such as artificial intelligence, deep learning or large language model.- Students can assess and evaluate the results of data analysis. They acquire basic knowledge about the visualization of results (e.g. using box plots, etc.).- Students have basic knowledge of development environments and tools for data analysis <p>Decision theory</p> <ul style="list-style-type: none">- Students acquire knowledge of the fundamentals of decision theory.- Students have basic knowledge of target systems.- Students have a basic understanding of selected decision-making situations and can categorize them. <p>INTERDISCIPLINARY COMPETENCE</p> <ul style="list-style-type: none">- Students work together in teams on data analysis and decision-making projects.- Students work independently on sub-areas of these topics and plan their own work processes.
Prerequisites	<p>Fundamentals of Business Informatics, in particular the following areas from the Bachelor's program in Business Informatics:</p> <ul style="list-style-type: none">- Business administration- Statistics und Operations Research- Business mathematics
Recommended reading	
Teaching methods	
Assessment methods	
Language of instruction	English
Name of lecturer	Dr. Klaus Kühnel
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Link	

Courses in English **Course Description**

Course content

- Fundamentals of data analysis and decision theory
- Development environments and tools for data analysis
- Approaches for data preparation
- Bayesian Statistics
- Methods for machine learning
- Methods for assessing and visualizing analysis results
- Target systems and requirements for the formulation of targets and Target systems
- Categorization of decision theory and situations: descriptive and normative/prescriptive decision theory
- Selected multi-criteria decision making Methods: Utility analysis as an example of Multiple Attribute decision making as well as multi Objective decision making with weighted Objective function and MinMax optimization

Remarks