Valid from 2024.HS

Module description: Data Processing with R

Module Code	t.BA.DS.PM2.20HS
ECTS Credits	4
Language of Instruction/Examination	German
Organizational Unit	IDP
Module Coordinator	Christoph Hofer
Legal Framework	The module description is part of the legal basis in addition to the general academic regulations. It is binding. During the first week of the semester a written and communicated supplement can specify the module description in more detail.
Module Characteristic	Type 4* 4 lab lessons per semester week and half-class
Module Description	Preparing, cleansing and visualising data are central tasks of a data scientist. In this module students train and consolidate the necessary skills in project teams, which they have acquired in the modules Explorative Datenanalyse and Datenbanken.
Module Content	• Students expand their techniques learned in the modules Explorative Datenanalyse and Datenbanken using practical examples. For this purpose, students will work in small project teams on various tasks of increasing complexity. In addition to consolidating their specialist skills, students will also be encouraged to develop interdisciplinary skills such as teamwork and working through gaps in knowledge (research). Students have to record the course of the project (including critical reflection) and record the results in writing or oral form.
Prerequisite Knowledge	Knowledge of the statistical software R and basic knowledge of explorative data analysis

Learning Objectives (Competences)

Students...	Competencies	Taxonomies
Students are able to use the statistical software R to transform, sort, filter, group, aggregate and combine data for specific questions and to generate useful variables from existing variables.	F, M	K3
Students are able to use the statistics software R to clean up data sets and find outliers and errors, remove duplicates and mark missing values and impute them by using simple methods.	F, M	K3
Students are able to import data from various file formats (text, CSV, Excel, ...) and data formats (JSON, XML, ...) into a suitable data structure of the statistical software R and can retrieve data from databases	F, M	K3
Students are able to identify knowledge gaps to solve problems in a project and are able to provide the necessary information.	SE	K3
Students are able to create shiny interfaces for standardised data formats using the statistics software R, which allows third parties to carry out simple data analyses independently via a GUI.	F, M	K3
The students are able to work together in a team in a goal-oriented manner, support each other and take responsibility for the developed results in the joint project.	SO	K3
Students are able to write functions for routine analyses with the statistics software Rand are able to automate data preparation, cleansing and visualisation (automated reporting).	M, F	K3

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Performance Assessment

End-of-module exam	Assessment	Length (min.)	Weighting	Form
other	Grade		100	acc. to module agreement

Performance assessment during the semester	Assessment	Length (min.)	Weighting	Form
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Classroom Attendance Requirement	None
Learning material	
Comments	Individual performance can also influence individual grades in group work, i.e. not all group members must always receive the same grade.