Module Description/Syllabus

(•) BE ( ) IM ( ) HM ( ) CfPS

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Module	Modellierung mit R	Module-Number:
Course Title	The R and R Environment Studio	Overall grade weighting (in %): 2,38
Recommended alternative modules or courses	-	
Course of Studies	Industrial Engineering	
Examination No. (SuP)		valid SER: PO20222
Mode of Study	☒ full-time ☐ part-time	
Study Cycle EQF-Level	(•) Bachelor ( ) Master	
Frequency	( ) winter term ( ) summer term (•) each semester	
Language Competence Level and Course code SAP ☐		
Responsible for the module	Prof. Dr. Johannes Schmitz	
Lecturer/s	Prof. Dr. Johannes Schmitz	
Typ of course	(•) compulsory ( ) optional	
Mode of delivery		
Language of instruction	(•) English ( ) German	**Level of course**: 6th semester
Teaching Methods	Lecture; Exercises	**Duration**: 1 semester

Work parameters

HNU-Workload-Calculator

contact hours in lecture form	exercises (hours)	self-studies (hours)	total (hours)
90	60		150

eLearning (hours)	examination pre-paration (hours)	Transfer (hours)	Units ("UE")

Number of participants min./max.	ECTS-Points	Volume (hours per semester week)
10 /	05	04

Use for other studies	

Prerequisites/ Required competencies	
Learning Outcome **1) Knowledge** **2) Skills** **3) Responsibility and autonomy** Description eight EQF Levels and Learning Outcome (1-3)	Foundations: The students • learn about the basic software-side requirements, familiarize themselves with R and RStudio, and with the R syntax grammar. • learn about packages, functions and objects. What is more important, the course will help increase the student's self-belief needed for learning a new programming environment. Capabilities and Skills: The students • complete their own R based projects. From data import to manipulating R content, the course will also give access to the rules and foundations of creating high-quality graphics with ggplot2. In addition, they will understand how basic modeling is done in R. • produce scientific-type documentation using RMarkdown. Summary of Learning Objectives The students • know how to install and how to get around RStudio. • know and understand R and RStudio grammar. • know and understand R objects and functions. • know and understand what the Tidyverse is. • know data import techniques and basic data manipulation steps.
Content	1. EXPLORATION OF THE R ECOSYSTEM • Course Introduction • Introducing the RStudio Environment • The Basic Elements of the R Language 2. DATA HANDLING • Importing Data Into R • The Basics of Data Handling • Advanced Data Handling • Data Cleaning Elements # 3. VISUALIZATION • The Basics of Graphing Data • Advanced Graphing 4. MODELING Basic Examples of Modeling 5. COMMUNICATING THE RESULTS • RMarkdown • RMarkdown Formatting • Code Chunks in RMarkdown • Tables • Citing Information in Rmarkdown • The papaja Package

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Particular admission requirements **(if applicable)**	-
Curriculum semester, in which the student has to be mandatorily registered for the first attempt of examination	-
Assessment method(s)	Exam
Assessment criteria	
Required reading resources	
Additional (module) information	
Document Version	1
Document date	02.06.2023
Document was created by	
Valid from	01.09.2022
Updated	**by**
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