

MADS-DVVA - Data Visualization and Visual Analytics

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General information	
Module Code	MADS-DVVA
Unique Identifier	DataVisVisAn-01-MA-M
Module Leader(s)	Prof. Dr. Schwörer, Tillmann (tillmann.schwoerer@haw-kiel.de)
Lecturer(s)	Prof. Dr. Schwörer, Tillmann (tillmann.schwoerer@haw-kiel.de)
Offered in Semester	Wintersemester 2022/23
Module duration	1 Semester
Occurrence frequency	Regular
Module occurrence	In der Regel jedes Semester
Language	Englisch
Recommended for international students	Yes
Can be attended with different study programme	No

Curricular relevance (according to examination regulations)
Study Subject: M.Sc. - DS - Data Science Module type: Pflichtmodul Semester: 1

Qualification outcome
<i>Areas of Competence: Knowledge and Understanding; Use, application and generation of knowledge; Communication and cooperation; Scientific self-understanding / professionalism.</i>
Students know - available visualization techniques and understand for which purpose they are most suitable, - tools and best practices to closely integrate visual analysis, documentation, and presentation, - Programming frameworks for data visualization
Students are able to - use visualizations as a means to detect patterns in complex data, - design and develop expressive visualizations tailored to the specific purpose and recipient using programming languages
Students are able to - concisely present their approach and results in technical and functional terms - work successfully in teams on joint projects, leveraging and integrating the skills of all team members.
Students are able to - reflect on the strengths and weaknesses of visualization techniques, - give and receive constructive critique and advice and they adhere to principles for scientific communication.

Content information	
Content	<p>R essentials</p> <ul style="list-style-type: none"> - RStudio and RMarkdown - Data acquisition and exploration with tidyverse - Data visualization packages <p>Principles of Data Visualization</p> <ul style="list-style-type: none"> - Grammar of Graphics - Visual perception and visual design - Storytelling <p>Applications</p> <ul style="list-style-type: none"> - Raw data - Statistical plots - Time Series - Geo spatial data - PCA and regression output <p>Interactive visualization</p> <ul style="list-style-type: none"> - Java-script based R libraries - Shiny
Literature	<p>Baumer, B., Kaplan, D. and Horton, N. (2017): Modern Data Science with R. 2. Auflage. Taylor & Francis Inc.</p> <p>Wilke: Fundamentals of Data Visualization: A Primer on Making Informative and Compelling Figures. O'Reilly, first edition, online available: https://serialmentor.com/dataviz.</p> <p>Wickham, H. (2016): ggplot2: Elegant Graphics for Data Analysis (Use R!). 2. Auflage. Springer.</p> <p>Wickham, H. (2021): Mastering Shiny: Build Interactive Apps, Reports, and Dashboards Powered by R. 1. Auflage. O'Reilly UK Ltd.</p>

Teaching formats of the courses	
Teaching format	SWS
Lehrvortrag + Übung	4

Workload	
Number of SWS	4 SWS
Credits	5,00 Credits
Contact hours	48 Hours
Self study	102 Hours

Module Examination	
Examination prerequisites according to exam regulations	None
MADS-DVVA - Portfolioprüfung	<p>Method of Examination: Portfolioprüfung</p> <p>Weighting: 100%</p> <p>wird angerechnet gem. § 11 Absatz 2 PVO: No</p> <p>Graded: Yes</p>

Miscellaneous	
Recommended Prerequisites	Basic knowledge of a programming language such as R or Python.