

## MADS-DVVA - Data Visualization and Visual Analytics

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<b>General information</b>	
<b>Module Code</b>	MADS-DVVA
<b>Unique Identifier</b>	DataVisVisAn-01-MA-M
<b>Module Leader(s)</b>	Prof. Dr. Schwörer, Tillmann (tillmann.schwoerer@haw-kiel.de)
<b>Lecturer(s)</b>	Prof. Dr. Schwörer, Tillmann (tillmann.schwoerer@haw-kiel.de)
<b>Offered in Semester</b>	Wintersemester 2026/27
<b>Module duration</b>	1 Semester
<b>Occurrence frequency</b>	Regular
<b>Module occurrence</b>	In der Regel jedes Semester
<b>Language</b>	Englisch
<b>Recommended for international students</b>	Yes
<b>Can be attended with different study programme</b>	No

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

<b>Qualification outcome</b>
<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.

<b>Content information</b>	
<b>Content</b>	<p>Foundations of Data Visualization</p> <ul style="list-style-type: none"> <li>- Perception and Visualization Design</li> <li>- Interactive Dashboards</li> <li>- Visual storytelling</li> </ul> <p>Python for Data Visualization</p> <ul style="list-style-type: none"> <li>- Plotly</li> <li>- Matplotlib</li> <li>- Geopandas</li> <li>- Streamlit</li> </ul> <p>Applications</p> <ul style="list-style-type: none"> <li>- Comparing categories</li> <li>- Relationships</li> <li>- Time series</li> <li>- Geographic data</li> <li>- Interactive visualization</li> </ul>
<b>Literature</b>	<ul style="list-style-type: none"> <li>- Lecture Slides</li> <li>- Cole Nussbaumer Knaflic, <i>Storytelling with Data: A Data Visualization Guide for Business Professionals</i>, 2015</li> <li>- Jonathan Schwabish, <i>Better Data Visualizations: A Guide for Scholars, Researchers, and Wonks</i>, 2021</li> <li>- Claus O. Wilke, <i>Fundamentals of Data Visualization: A Primer on Making Informative and Compelling Figures</i>. O'Reilly, first edition, 2019, online available: <a href="https://serialmentor.com/dataviz">https://serialmentor.com/dataviz</a>.</li> </ul>

<b>Teaching formats of the courses</b>	
<b>Teaching format</b>	<b>SWS</b>
Lehrvortrag + Übung	4

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

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

<b>Miscellaneous</b>	
<b>Recommended Prerequisites</b>	Basic knowledge of Python.