# Visualization

Winter

(in German: Visualization )

**Module-ID: FIN-INF-102812**

| Abbreviation | Credit Points | Semester | Term | Duration | Language | Level |
|---|---|---|---|---|---|---|
| VIS | 6 | Winter | starting at 1. | 1 Semester | english | Master |

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|---|---|
| **Link:** | LSF |
| **Limited accessability:** | |
| **Responsibility:** | Bernhard Preim |
| **Lecturer:** | Bernhard Preim |
| **Classes:** | • Lecture *Visualization*<br>• Exercise class *Visualization* |
| **Applicability in curriculum:** | - M.Sc. DKE: Applied Data Science<br>- M.Sc. DE: Methoden der Informatik<br>- M.Sc. DE: Informatik Wahlpflicht (SPO 2027)<br>- M.Sc. VC: Visual Computing<br>- M.Sc. VC: Visual Computing (SPO 2027) |

**Intended learning outcomes:**
Students ...

- understand how physiological perception affects visualization effectiveness
- know basic visualization techniques
- can generate appropriate visualizations for business and statistical data
- obtain a dataset with at least 100 observations and 5 attributes, formulate two analytical questions, and create data visualizations to answer these questions.

**Content:**

- Visualization goals and quality criteria
- Understanding of fundamentals of visual perception
- Overview of data structures in visualization
- Basic algorithms (Isolines, color scales, diagram techniques),
- Direct and indirect visualization of volume data
- map-based visualization
- dashboard design
- Information visualization

**Workload:**
56h contact time + 124h self study, students have to solve a comprehensive additional task where they analyze and visualize a multi-dimensional dataset

| Pre-examination requirements: | Type of examination: | Teaching method / lecture hours per week (SWS): |
|---|---|---|
| | Written exam, 2 hours | • 2 SWS Lectures<br>• 2 SWS Exercise classes |

| Prerequisites according to examination regulations: | Recommended prerequisites: |
|---|---|
| none | • Module Computer Graphics I<br>• Modules Mathematics I, II and III |

| Media: | Literature: |
|---|---|
| • Powerpoint presentation<br>• Sketches<br>• Videos | • P. and M. Keller (1994): Visual Cues, IEEE Computer Society PressT. Munzner (2015).<br>• Visualization Analysis and Design: Principles, Techniques, and Practice, A K Peters<br>• W. Schroeder, K. Martin, B. Lorensen (2001): The Visualization Toolkit: An object-oriented approach to 3d graphics, 3. Aufl. Springer, Heidelberg<br>• A. Telea (2014): Data Visualization: Principles and Practice, Second Edition, AK Peters (2. Auflage)<br>• M. Ward, D. Keim, G. Grinstein (2015): Interactive Data Visualization: Foundations, Techniques, and Applications, Second Edition |

**Comments:**

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