

## Topics in cluster analysis

§ Name of instructor

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§ Short description

This course delves into advanced topics in cluster analysis, focusing on both classical clustering methods and modern techniques from an application-oriented perspective. It aims to equip students with the skills to critically evaluate different clustering algorithms, to interpret and utilize a range of (dis)similarity measures, and to identify the challenges and considerations in clustering categorical and mixed-type data. Through a blend of theory and practice, the course will explore algorithmic nuances, performance metrics, and real-world applications, empowering students to make data-driven decisions.

§ Schedule

1. Beyond partitioning and hierarchical methods
2. Interpreting and applying appropriate dis(similarity) measures for categorical data
3. Challenges in clustering mixed-type data
4. Aspects of cluster validity

§ Introductory background

Everitt, B. S., Landau, S., Leese, M., & Stahl, D. (2011). *Cluster analysis*. John Wiley & Sons.

Kaufman, L., & Rousseeuw, P. J. (2009). *Finding groups in data: an introduction to cluster analysis*. John Wiley & Sons.

Leisch, F., Dolnicar, S., & Grün, B. (2018). *Market segmentation analysis: Understanding it, doing it, and making it useful*. Springer.

§ Facilities Required

- Software: R/Rstudio
- Course Material. All course materials, including the data and R scripts for the examples, are available for course participants:  
[github.com/amarkos/unsupervised-learning](https://github.com/amarkos/unsupervised-learning)