Course Name	Matrix Methods in Data Science
Contents and Objectives	Content: • Examples of matrix formulations within data science applications • Basic factorizations: QR, SVD, CX, CUR, NMF • Tensor methods: CP-Format, Tucker, Tensor Train • Clustering: k-means, Spectral Clustering • Deep Learning • Kernel methods, SVM Objectives: The students are introduced to modern methods of numerical linear algebra and their application within data science. They will be able to use matrix factorization techniques and are able to use high dimensional tensor methods. They will be able to use and understand neural networks and support vector machines.
Teaching	This course consists of lectures and exercise classes. • Lecture: Matrix Methods in Data Science (4h/week) • Exercise class: Matrix Methods in Data Science (2h/week) This class can be taught remotely.
Prerequisites	
Examination	Oral exam (30 minutes)
Credits	8 ECTS points
Frequency	This course is given at least every second year.
Workload	The estimated total working time for this course is 240 hours.
Duration	This course is given during one semester.