Course content for International Master program „Mathematical modeling, computation and optimization"

Course name	Mathematics of Big Data
Content and Objectives	Contents: • Ranking • Clustering • Dimensionality Reduction • Machine Learning • Streaming • Recommendation Systems • Social Network Graphs • Advertising • Trading Systems • Opinion Dynamics Objectives of the course: The course overviews current methods and models of Big Data Analytics. The tools come from applied mathematics, in particular, numerical linear algebra, statistics, optimization, game theory, graph theory, ordinary differential equations etc. The link to relevant business applications is given.
Teaching	This course consists of lectures and exercise classes. • Lecture: Mathematics of Big Data (2h/week) • Exercise class: Mathematics of Big Data (2h/week)
Prerequisites	Basic notions of Analysis and Linear Algebra
Examination	Oral exam (30 minutes)
Credits	6 ECTS points
Frequency	This course is given at least every second year.
Workload	The estimated total working time for this course is 180 hours.
Duration	This course is given during one semester.