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

Course name	Algebraic Topology
Contents and Objectives	Content: • Basics of set theoretic topology • Basic topological invariants • Homotopy theory • Homology theory • Fibre bundles and Morse theory • Knot theory Objectives of the course: Basics of algebraic topology are discussed with a view towards applications in other domains such as Geometry, Analysis etc.
Teaching	This course consists of lectures and exercise classes. • Lecture: Algebraic topology (3h/week) • Exercise class: Algebraic topology (1h/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 once every second year.
Workload	The estimated total working time for this course is 180 hours.
Duration	This course is given during one semester.