Program	Type of studies (cycle)	Third cycle
	Name of the program	Doctoral Studies in Mathematical and Computer Science

Course

Course title	**Algebraic topology II**

Course code	Semester	Course status	ECTS credits	Contact hours
PMAT 690	I	Elective course	10	30

Aims and intended learning outcomes	This course continues Algebraic Topology I, in which basic invariants of topological spaces, such as the fundamental group and homology, were developed. The main focus is cohomology, which has additional interesting properties and applications in various areas of mathematics. Homotopy groups, which generalize the fundamental group, and stable homotopy theory are also among the main topics.

Course content/topics

- Cohomology
- Mayer–Vietoris sequence
- Cup product
- Künneth theorem
- Poincaré duality
- Manifolds and de Rham cohomology
- Homotopy groups
- Freudenthal suspension theorem and stable homotopy
- Cubical diagrams and Blakers–Massey theorem

LITERATURE

[1] Allen Hatcher, Algebraic Topology, Cambridge University Press, 2002

[2] Tammo Tom Dieck, Algebraic Topology, European Mathematical Society, 2008

[3] James Davis and Paul Kirk, Lecture Notes in Algebraic Topology, American Mathematical Society, 2001

[4] J. Peter May, A Concise Course in Algebraic Topology, University of Chicago Press, 1999

Grading

	Criterion	Points	Cut-off points
1.	Homework	70	40
2.	Final exam	30	15
	Total	100	55