

<b>Course Name</b>	Algebraic topology
<b>Contents and Objectives</b>	<p><u>Content:</u></p> <ul style="list-style-type: none"> <li>• Fundamental groups and coverings</li> <li>• Homotopy theory</li> <li>• Homology and cohomology theory</li> <li>• Theory of sheaves</li> <li>• Category theory and basics of homological algebra</li> <li>• Basic topological invariants</li> <li>• Poincaré duality</li> <li>• Knot theory</li> </ul> <p><u>Objectives of the course:</u> Basics of algebraic topology such as homotopy and homology are discussed with a view towards applications in other domains such as Geometry. Analysis etc. Along the way, necessary tools from homological algebra are introduced.</p>
<b>Teaching</b>	<p>This course consists of lectures and exercise classes.</p> <ul style="list-style-type: none"> <li>• Lecture: Algebraic topology (4h/week)</li> <li>• Exercise class: Algebraic topology (2h/week)</li> </ul>
<b>Prerequisites</b>	Basic notions of Analysis and Linear Algebra
<b>Verwendbarkeit des Moduls</b>	-
<b>Examination</b>	Oral exam (30 minutes)
<b>Credits</b>	8 ECTS points
<b>Frequency</b>	This course is given at least every second year.
<b>Workload</b>	The estimated total working time for this course in 240 hours.
<b>Duration</b>	This course is given during one semester.