Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
MATH 522	Algebraic Topology	1	3	0	0	3	7

Prerequisites	
Admission Requirements	

Language of Instruction	English
Course Type	Elective
Course Level	Masters Degree
Objective	This is a course on the homology theories of topological spaces. Topics include: Singular homology, CW complexes, Homological algebra, Cohomology, and Poincare duality.
Content	Simplicial Homology, Singular Homology, Cellular Homology, Homological algebra, Cohomology, and Poincare duality.
References	Algebraic Topology, Alain Hatcher

Theory Topics

Week	Weekly Contents
1	Simplical Homology
2	Singular Simplices and Chains
3	Homology, Categories, Functors, Natural Transformations
4	Homotopy Invariance of Homology, Relative Homology
5	The Homology Long Exact Sequence, Excision and Applications
6	The Eilenberg Steenrod Axioms and the Locality Principle
7	Exam
8	CW-Complexes, Homology of CW-Complexes
9	Real Projective Space, Euler Characteristic and Homology Approximation
10	Tensor Product, Tensor and Tor
11	Universal Coefficient Theorem, Künneth and Eilenberg-Zilber
12	Coproducts, Cohomology
13	Products in Cohomology, Cup Product (cont.)
14	Poincaré Duality