COURSE NAME	Topics in topology					
Code	PMM218	Year of study	2nd year of graduate study			
Course teacher	Vlasta Matijević	Credits (ECTS)	6			
Associate teachers		Type of instruction (number of hours)	L	S	E	
			45	15		
Status of the course	elective	Percentage of application of e-learning				

COURSE DESCRIPTION	
Course objectives	The course objective is to introduce students with fundamental concepts, methods and techniques in algebaric topology. This gives the basics for more advanced studies in topolgy, geometry and algebra.
Course enrolment requirements and entry competences required for the course	Successfully completed courses: Introduction to topology. Metric spaces. Algebraic structures. Algebra 1. Algebra 2.
Learning outcomes expected at the level of the course (4 to 10 learning outcomes)	It is expected that a student will - understand fundamental concepts, methods and techniques in algebraic topology - be able to state and prove basic results of homotopy and homology theory - be able to construct homotopies and prove homotopy equivalence for some simple examples - be able to calculate fundamental group and homology groups of some simple CW-complexes - be able to determine covering spaces over some simple topological spaces with nice local behaviour - be able to show how topological information may be encoded algebraically.
Course content broken down in detail by weekly class schedule (syllabus)	- Elements of homotopy theory (22 hours) Homotopic maps, homotopic paths and homotopy type. CW complexes. Fundamental group. Seifert-Van Kampen theorem. Covering spaces. Lifting of paths. Lifting of arbitrary maps. Classification of covering maps. - Elements of homology theory (23 hours) Simplicial homology. Singular homology. Homotopy invariance. Exact sequences and excision. Equivalence of simplicial and singular homology. Axioms for homology. Categories and functors. Homology and fundamental group.
Format of instruction	Lectures and seminars
Student responsibilities	Attendance at lectures and seminars, written assignments, at least one seminar lecture on a given topic, self-study using required and optional literature
Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Lecture attendance 0,5 ECTS Seminar lecture 1 ECTS Exam 4,5 ECTS
Grading and evaluating student work in class and at	The exam is oral. The oral exam is evaluated 80% and the seminar lecture 20% in the final grade.

the final exam	
Required literature (available in the library and via other media)	W. Massey, *Algebraic Topology*, Springer-Verlag,1967. J. Munkres, *Elements of Algebraic Topology*, Addison-Wesley Publishing Company, 1984. A. Hatcher, *Algebraic Topology*, Cambridge University Press, 2002
Optional literature (at the time of submission of study programme proposal)	J. Munkres, *Topology*, Pearson Education International, New York, 2000 G.E.Bredon, *Topology and Geometry*, Springer-Verlag, 1993.
Quality assurance methods that ensure the acquisition of exit competences	Exam statistics and students' quality evaluation through anonymous poles.
Other (as the proposer wishes to add)	