Course code	
Type and description	EC
ECTS credit	1
Course name	Advanced topological fixed point theory
Course name in Polish	Zaawansowana topologiczna teoria punktów stałych
Language of instruction	English
Course level	8 PRK
Course coordinator	Wojciech Kryszewski
Course instructors	Wojciech Kryszewski

Delivery methods and course duration		Lecture	Tutorials	Laboratory	Project	Seminar	Other	Total of teaching hours during semester
	Contact hours	0	0	0	15	0	0	15
	E-learning	No	No	No	No	No	No	
	Assessment criteria (weightage)	0,00					0,00	

Course objective	1. Acquisition of knowledge of basic notions in topological fixed point theory; absolute neighborhood retracts. 2. Acquisition of knowledge about the general Schauder fixed point theorem on absolute neighborhood retracts and its applications. 3. Acquisition of knowledge about the Hopf-Lefschetz theorem and its role
Learning outcomes	After the course a PhD student is able to: 1. understands and applies the basic notions of the topological fixed point theory – effects W4, U4, K1 2. knows and is able to apply the general fixed point theorem of Schauder – effects W4, U4, K1 3. knows the Hopf-Lefschet fixed point theorem and its role - efekty W4, U4, K1
Assessment methods	Effects W4, U4, K1 – oral examination and presentation The final evaluation is based on: Exam - 80% Presentation - 20%

Prerequisites	Master degree course in analysis and topology
Course content with delivery methods	Lecture 1. Absolute neighborhood retracts and extensors; axiomatic approach to the singular homology theory.. 2. General Schauder theorem for maps of absolute neighborhood retracts and its application e.g. in integral equations. 3. The Lefschetz fixed point theorem on polyhedra and on absolute neigborhood retracts; the Leray-Lefschetz formalism. Presentation 1. An ex ample of application of the general Schauder theorem in partial differential equations 2. Fixed point index of maps of absolute neighborhood retracts.
Basic reference materials	1. Andrzej Granas, Fixed Point Theory, Springer 2003 2. Robert Brown, The Lefschetz Fized Point Theorem, Scott-Foresman 1971.
Other reference materials	
Average student workload outside classroom	10 h
Comments	
Last update	11.05.2023