Course code	
Type and description	EC
ECTS credit	1
Course name	Differential Inclusions
Course name in Polish	Inkluzje różniczkowe
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	15
E-learning	No	No	No	No	No	No	
Assessment criteria (weightage)	0,00					0,00	

Course objective

1. Acquisition of knowledge on set-valued mappings and their regularity.

2. Acquisition of knowledge about selection and approxiamtion theorems for set-valued maps and their applications.

3. Acquisition of knowledge about Basic theorems on the existences of solutions to dfferential inclusion of upper semicontinuous and lower semicontinuous type; the structure of solutions.

Learning outcomes

After the course a PhD student is able to:

1. understands and applies notions of the theory of set-valued maps – effects W4, U4, K1

2. knows the basic theorems on selection and approximation of set-valued maps – effect W4, U4, K1

3. knows how to apply the acquired knowledge to some concrete problems, i.e. optimal control problems – effects 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. Set-valued mappings and their regularity. 2. Selection Thorem of Ryll-Nardzewski, Michael and the approxiamtion Thorem of Cellina. 3. Differential inclusion of Upper and Lower semicontinuous type, the existence and structure of solutions. PROJECT 1. Fixed point theorems for set-valued maps. 2. Directional continuity of set-valued maps.
Basic reference materials	1. Lecture notes of the lecturer. 2. J.-P. Aubin, A. Cellina, Differential Inclusions, Springer 1987
Other reference materials	J.-P. Aubin, H. Frankowska, Set-valued analysis, Kluwer 1996
Average student workload outside classroom	10 h
Comments	
Last update	11.05.2023