

<b>Course code</b>																																	
<b>Type and description</b>	EC - elective subjects from the discipline of Mathematics																																
<b>ECTS credit</b>	1																																
<b>Course name</b>	Differential Inclusions																																
<b>Course name in Polish</b>	Inkluzje różniczkowe																																
<b>Language of instruction</b>	English																																
<b>Course level</b>	8 PRK																																
<b>Course coordinator</b>	prof. dr hab. Wojciech Kryszewski																																
<b>Course instructors</b>	prof. dr hab. Wojciech Kryszewski																																
<b>Delivery methods and course duration</b>	<table border="1"> <thead> <tr> <th></th> <th>Lecture</th> <th>Tutorials</th> <th>Laboratory</th> <th>Project</th> <th>Seminar</th> <th>Other</th> <th>Total of teaching hours during semester</th> </tr> </thead> <tbody> <tr> <td>Contact hours</td> <td>0</td> <td>0</td> <td>0</td> <td>5</td> <td>0</td> <td>0</td> <td>5</td> </tr> <tr> <td>E-learning</td> <td>no</td> <td>no</td> <td>no</td> <td>no</td> <td>no</td> <td>no</td> <td>no</td> </tr> <tr> <td>Assessment criteria (weightage)</td> <td>0</td> <td>0</td> <td>0</td> <td>100%</td> <td>0</td> <td>0</td> <td>100%</td> </tr> </tbody> </table>		Lecture	Tutorials	Laboratory	Project	Seminar	Other	Total of teaching hours during semester	Contact hours	0	0	0	5	0	0	5	E-learning	no	no	no	no	no	no	no	Assessment criteria (weightage)	0	0	0	100%	0	0	100%
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<b>Course objective</b>	<ol style="list-style-type: none"> <li>1. Acquisition of knowledge on set-valued mappings and their regularity.</li> <li>2. Acquisition of knowledge about selection and approximation theorems for set-valued maps and their applications.</li> <li>3. Acquisition of knowledge about Basic theorems on the existences of solutions to differential inclusion of upper semicontinuous and lower semicontinuous type; the structure of solutions.</li> </ol>																																
<b>Learning outcomes</b>	<p>After the course a PhD student is able to:</p> <ol style="list-style-type: none"> <li>1. understands and applies notions of the theory of set-valued maps – effects W1, U2, K3</li> <li>2. knows the basic theorems on selection and approximation of set-valued maps – effect W2, U1, K1-K3</li> <li>3. knows how to apply the acquired knowledge to some concrete problems, i.e. optimal control problems – effects U1, K1-K3</li> </ol>																																
<b>Assessment methods</b>	<p>Effects W1, U2, W2 – oral examination</p> <p>effects U1, K1-K3.... – presentation</p>																																

	<p>The final evaluation is based on:</p> <p>Exam - 80%</p> <p>Presentation - 20%</p>
<b>Prerequisites</b>	Master degree course in analysis and topology
<b>Course content with delivery methods</b>	<p>PROJECT</p> <ol style="list-style-type: none"> <li>1. Fixed point theorems for set-valued maps.</li> <li>2. Directional continuity of set-valued maps.</li> </ol>
<b>Basic reference materials</b>	<ol style="list-style-type: none"> <li>1. Lecture notes of the lecturer.</li> <li>2. J.-P. Aubin, A. Cellina, Differential Inclusions, Springer 1987</li> </ol>
<b>Other reference materials</b>	J.-P. Aubin, H. Frankowska, Set-valued analysis, Kluwer 1996
<b>Average student workload outside classroom</b>	15 h
<b>Comments</b>	
<b>Last update</b>	July 2020