

Course code																																	
Type and description	Elective Course																																
ECTS credit	1																																
Course name	Selected problems of descriptive set theory																																
Course name in Polish	Wybrane zagadnienia deskryptywnej teorii mnogości																																
Language of instruction	English																																
Course level	8 PRK																																
Course coordinator	Marek Balcerzak																																
Course instructors	Marek Balcerzak																																
Delivery methods and course duration	<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>15</td> <td>0</td> <td>0</td> <td>15</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></td> </tr> <tr> <td>Assessment criteria (weightage)</td> <td>0,00</td> <td></td> <td></td> <td></td> <td></td> <td>0,00</td> <td></td> </tr> </tbody> </table>		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	
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Course objective	<p>Course objective:</p> <ol style="list-style-type: none"> 1. Acquiring knowledge about main notions of classical descriptive set theory. 2. Acquiring knowledge about Borel hierarchy and establishing Borel classes of sets 3. Acquiring knowledge about analytic and coanalytic sets in Polish spaces. 																																
Learning outcomes	<p>After the course, a PhD student is able to:</p> <ol style="list-style-type: none"> 1. Describe basic examples of Polish spaces and their properties - effects W4, U4, K1 2. Evaluate the Borel class of selected types of sets - effects W4, K1 3. Describe the notion of an analytic set and properties of analytic sets - effects W4, K1 																																
Assessment methods	<p>W4 - oral exam</p> <p>K1 - project seminar presentation</p> <p>W4, U4 - written project</p> <p>The final grade:</p> <p>Exam - 50%</p> <p>Presentation - 20%</p> <p>Project evaluation - 30%</p>																																
Prerequisites	Foundations of set theory and topology																																
Course content with delivery methods	<p>LECTURE</p> <ol style="list-style-type: none"> 1. Polish spaces. The Alexandrov theorem.. The Cantor space and the space of sequences with 																																

	<p>natural terms.</p> <p>2. Transfer theorems on maps between Polish spaces. Borel isomorphism theorem.</p> <p>3. Borel hierarchy in Polish spaces. Examples of Borel sets in $C[0,1]$.</p> <p>4. Analytic and coanalytic sets. Basic properties and examples.</p> <p>PROJECT</p> <p>5. Presentation of examples of Borel sets in selected spaces and examples of analytic and coanalytic sets.</p>
Basic reference materials	<p>1. A. S. Kechris, Classical descriptive set theory, Springer 1994.</p> <p>2. S. M. Srivastava, A course of Borel sets, Springer 1998.</p>
Other reference materials	
Average student workload outside classroom	10h
Comments	
Last update	11.05.2023