Załącznik Nr 1
do zarządzenia Nr 182/2023
z dnia 21 lipca 2023 r.

SYLLABUS FOR THE DOCTORAL SCHOOL

Lp.	Syllabus elements	Description
1	Course/module name in Polish and English	Infinitary Combinatorics/ Kombinatoryczna teoria mnogości
2	Scientific discipline	Mathematics
3	Name of organizational unit organizing education	Doctoral College of Mathematics
4	Unit conducting the course/module	Institute of Mathematics
5	Course/module code	--
6	Type of course/module	Optional
7	Year of studies	All years
8	Semester	Winter
9	Forms and methods of instruction	Lecture seminar
10	Educational contents	1.- ZFC, the class of ordinals and the class of cardinals, 2.- Infinite Ramsey Theory 3.- Combinatorial trees in different structures 4.- Ellentuck Space 5.- Almost disjoint families and the Ellentuck topology 6.- Filters and ideals on countable sets and its relationship with Ramsey theory 7.- Other related partition theorems.
11	Language of instruction	English
12	Intended learning outcomes regarding: Knowledge: -The student will be able to understand the ideas from combinatorial set theory. -The student will be able to find simple applications to other areas of Mathematics, in particular to Topology and Analysis. Skills: -The student will be able to carry out basic combinatorial constructions of different mathematical objects with strong combinatorial properties. -The student will be able to use these partition theorems and their ideas for their future work.	Symbols of learning outcomes: SD_W01, SD_W02 SD_U01, SD_U02, SD_U05, SD_U07

	Social competences: -The student will be able to systematically find ideas on the literature. -The student will understand the importance of combinatorics in solving problems. -The student will be able to understand the value of continuous education.	SD_K02, SD_K04
13	Methods of verifying intended learning outcomes	A test at the end of the course
14	PhD student's workload	
	PhD student's activity form	Average number of hours for completing the activity
	Numbers of class hours (according to the study plan) with teacher: - Lecture: - Problem sessions: - Laboratory: - Seminar: - Others:	30 hours of lectures, 30 hours of problem sessions. 60 hours in total.
	PhD student's own work, such as: - Preparing classes: - Developing results: - Reading the suggested literature: - Writing a class report: - Preparing for exam: - Others:	Reading suggested literature: 10 hours. Preparing for classes: 20 hours. Preparing for exam: 10 hours. 50 hours in total.
	Total hours:	110 hours
	Number of credits (if required)	
15	Conditions for crediting the course/module, including the rules for admitting to the exam, and the form and conditions for crediting individual forms of classes included in the given	Passing the final test.

	course.	
16	Literature	1. Winfried Just and Martin Weese. Discovering modern set theory. I, volume 8 of Graduate Studies in Mathematics. American Mathematical Society, Providence, RI, 1996. The basics 2. Winfried Just and Martin Weese. Discovering modern set theory. II, volume 18 of Graduate Studies in Mathematics. American Mathematical Society, Providence, RI, 1997. Set-theoretic tools for every mathematician 3. Matthew Foreman and Akihiro Kanamori, editors. Handbook of set theory. Vols. 1, 2, 3. Springer, Dordrecht, 2010 4. Kenneth Kunen and Jerry E. Vaughan, editors. Handbook of set-theoretic topology. North-Holland Publishing Co., Amsterdam, 1984 5. Tomek Bartoszyński and Haim Judah. Set theory. A K Peters, Ltd., Wellesley, MA, 1995. On the structure of the real line 6. Lorenz J. Halbeisen. Combinatorial set theory. Springer Monographs in Mathematics. Springer, London, 2012. With a gentle introduction to forcing 7. Thomas Jech. Set theory. Springer Monographs in Mathematics. Springer-Verlag, Berlin, 2003. The third millennium edition, revised and expanded

* wykład, seminarium, ćwiczenia, warsztaty, lektoraty, laboratoria
** prezentacja, projekt, analiza przypadku, dyskusja, metoda problemowa
*** stacjonarnie/zdalnie