

## COURSE DESCRIPTION

Course Name	Banach Spaces of Continuous Functions
Supervisor	Piotr Koszmider
ECTS credit allocation	4 – IM PAN Ph. D. program; 6 - recommended for MA programs
Duration	One semester
Number of hours	30
Language	English or Polish, if every participant speaks Polish
Prerequisites	Graduate course in functional analysis
Course content	Classification of separable $C(K)$ spaces. The dualities for $C(K)$ spaces. Eberlein, Corson, Radon-Nikodym compacta and WCG, weakly Lindelof and Asplund generated Banach spaces of the form $C(K)$ . The Grothendieck property. Operators on Banach spaces of the form $C(K)$ .
Recommended reading	M. Fabian, P. Habala, P. Hájek, V. Montesinos, V. Zizler, Banach space theory. The basis for linear and nonlinear analysis. CMS Books in Mathematics/Ouvrages de Mathématiques de la SMC. Springer, New York, 2011. S. Negrepointis, Banach spaces and topology. Handbook of set-theoretic topology, 1045–1142, North-Holland, Amsterdam, 1984. Z. Semadeni, Banach spaces of continuous functions. Vol. I. Monografie Matematyczne, Tom 55. PWN---Polish Scientific Publishers, Warsaw, 1971.
Learning outcomes	1) Knows the basic classes of Banach spaces of continuous functions and is able to determine in concrete cases where a given space belongs. 2) Can build simple examples of Banach spaces of the form $C(K)$ which possess a given list of properties 3) Understands the weak* topology in the dual to $C(K)$ and its links with $K$ 4) Is aware of consistency and independence results concerning the existence of Banach spaces of the form $C(K)$ with some special properties 5) Can construct operators from a given class on a concrete Banach space of the form $C(K)$
Assessment methods and criteria	Solving sets of Exercises and Exam
Remarks	