Title:	**Functional Analysis**
Lecture hours:	30
Study period: (summer/winter)	winter or summer
Number of credits:	6
Assessment methods:	classroom assessment, written exam
Language of instruction:	English
Prerequisites:	Analysis, Linear Algebra, Topology
Course content:	Linear spaces, Hamel basis, dimension; finite-dimensional spaces; norm, metric, and topology on linear spaces; examples of norms; Minkowski's functional; Hölder and Minkovski's inequalities; l_p-spaces; completeness of normed spaces; operators on Banach spaces – examples; Banach-Steinhaus theorem, closed graph and open mapping theorems; Hahn-Banach theorem; dualiy.; Hilbert spaces; complementability of closed subspaces; Bessel's inequality, Parseval's identity; operators on Hilbert spaces; spectral theorem.
Learning outcomes:	By the end of the course students should know: Hahn-Banach and Banach-Steinhaus theorems, The Open Mapping Theorem, complemented subspaces of Hilbert space, Parseval's identity; Basic examples of Banach spaces: Hilbert, $C(K)$ for K compact, l_p, L_p, basic examples of bounded operators; duality and reflexivity.
Name of lecturer:	Prof. Marek Wójtowicz
Contact (email address):	mwojt@ukw.edu.pl
Literature:	J. B. Conway, *A Course in Functional Analysis*, 1994. W. Rudin, *Real and Complex Analysis*, 1987.