

Title:	Calculus 1
Lecture hours:	45
Study period: (summer/winter)	winter or summer
Number of credits:	6
Assessment methods:	oral and written exam
Language of instruction:	English
Prerequisites:	none
Course content:	Fields of real and complex numbers. Metric spaces. Open and closed subsets of metric spaces; interior, closure and boundary of sets, perfect, compact, connected, and dense sets. Convergence of sequences of points in metric spaces. Convergence of sequences of real and complex numbers. Cauchy criterion. Lower and upper limits. Relations between convergence and the operations. Series of complex numbers: absolute and conditional convergence. Rearranging series and Riemann's theorem. The comparison, root and ratio tests. The theorems of Leibniz, Abel and Dirichlet. Pointwise and uniform convergence. Power series and radius of convergence. Continuity of functions and its characterization. Continuity, operations and composite functions. Uniform continuity.
Learning outcomes:	A student should demonstrate knowledge of basic properties of subsets of metric spaces, sequences, series and functions. A student also should verify convergence and continuity, openness/closedness/compactness/connectedness.
Name of lecturer:	Prof. Oleh Nykyforchyn
Contact (email address):	oleh.nyk@gmail.com
Literature:	<ol style="list-style-type: none"> 1. E. Hewitt, K.R. Stromberg. Real and Abstract Analysis. Springer-Verlag, 1965 2. Walter Rudin. Principles of Mathematical Analysis. 3rd ed. International Student Edition. McGraw-Hill. 1985 3. K.R. Stromber. An Introduction to Classical Real Analysis. Wadsworth, California, 1981