Title:	**Calculus 2**
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:	Rudiments of metric topology. Convergence of sequences and series.
Course content:	Limit of a function, Cauchy criterion, limits and algebraic operations on functions, limits and orders, limits and uniform convergence, connection between continuity and uniform convergence, Dini's theorem, jump points, classification of jump points, limits of monotone functions, some remarkable limits, elementary functions, differentiability and linear approximability, differentiability and continuity, differentiability and algebraic operations on differentiable functions, chain rule, local maxima and minima, Fermat's principle, the Rolle-Lagrange-Cauchy-Darboux mean value theorem, de l'Hospital's rules, Taylor's theorem, monotonicity and differentiability, convex functions, primitives, basic integrals, integration rules, Riemann integral and criteria of integrability, properties of indefinite integrals, integrating methods, the Newton-Leibniz, Lebesgue, and improper Riemann integrals and their criteria of integrability
Learning outcomes:	A student should demonstrate basic knowledge in connection with continuity, differentiability, and integrability. In particular, he/she should be able to explain and discuss (with suitable examples) if and how these properties are affected by certain algebraic and limit operations. He/she should be able to evaluate indefinite integrals of several basic types and apply basic integrability criteria for (improper) Riemann, Newton-Leibniz, and Lebesgue integrals.
Name of lecturer:	Prof. Oleh Nykyforchyn
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Literature:	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