

Subject name	Mathematics - One Variable Analysis	
Subject code	IS-M1V-15	
Department	Applied Mathematics	
Faculty	Environmental Engineering and Land Surveying	
Subject supervisor/Lecturer	Prof. Marek Ptak Ph.D.	
General information	Teaching period	summer / winter semester
	ECTS credit	6
	Lectures total	15
	Lab practicals	30
Objective and general description	Course covers: limits of sequences and functions, theory of series, definition of derivative, mean value theorem, L'Hospital rule, Taylor's formula, maxima and minima, concavity and convexity of functions, applications of derivative, antiderivative, integration by parts and by substitution, Riemann integral, applications of integral.	
Lectures 15 hours	<ol style="list-style-type: none"> 1. Convergence of sequences 2. Definition and convergence of series and power series 3. Complex numbers 4. Relations, functions as a relations 5. Function properties 6. Limit and continuity of functions 7. Derivatives 8. Lagrange's theorem, Taylor's theorem 9. De L'Hospital theorem 10. Applications of derivatives. Extreme values of functions 11. Concavity and convexity of functions 	
Lab practicals 30 hours	<ol style="list-style-type: none"> 1. Convergence of sequences 2. Definition and convergence of series and power series 3. Complex numbers 4. Relations, functions as a relations 5. Function properties 6. Limits and continuity of functions 7. Derivatives 8. Lagrange's theorem, Taylor's theorem 9. De L'Hospital theorem 10. Applications of derivatives. Extreme values of functions 11. Concavity and convexity of functions 	
References	<ol style="list-style-type: none"> 1. C. H. Edwards, D. E. Penny, "Calculus and analysis geometry", Englewood Cliffs, 1986. 2. F. H. Miller "Calculus", London, 1947. 3. W. Rudin "Principles of Mathematical Analysis", Warszawa, 1982. 4. V. A. Kudryavtsev, B. P. Demidovich "A Brief Course of Higher Mathematics", Moskwa, 1981. 	