DOCTORAL (PHD) STUDIES
COURSE DESCRIPTION

Course title	Field of science	Faculty	Institute
Algebraic Numbers, Polynomials and Diophantine Analysis	Mathematics (N 001)	Faculty of Mathematics and Informatics	Institute of Mathematics
Study method	Number of credits	Study method	Number of credits
Lectures	0	Consultations	1
Individual work	4	Seminars	0

Course summary
1. **Algebraic integers.** Degree, height and discriminant of an algebraic integer. Trace and norm of an element. Discriminant and basis of a ring. Group of units. Quadratic and cubic extensions. 2. **Algebraic and transcendental numbers.** Approximation by rationals and the rate of approximation: theorems of Kronecker, Dirichlet and Liouville. Roth's theorem and its applications. Construction of transcendental numbers. Numbers e and π . Diophantine equations and their application.
Main literature
1. Evertse, J. S. Diophantine approximation, Online course notes, Universiteit Leiden, 2016. http://www.math.leidenuniv.nl/~evertse/dio.shtml
2. Narkiewicz, W. Elementary and Analytic Theory of Algebraic Numbers, Springer-Verlag, New York, 2004.
3. Waldschmidt, M. Introduction to Diophantine methods: irrationality and transcendence, Online course notes, 2007, https://webusers.imj-prg.fr/~michel.waldschmidt/articles/pdf/IntroductionDiophantineMethods.pdf

Consulting teacher	Scientific degree	Pedagogical name	Main publications in the field of science of the last 5 year period
Artūras Dubickas	Habil. dr.	Prof.	1. A. Dubickas and I. E. Pritsker, Extremal problems for polynomials with real roots, Journal of Approximation Theory 253 (2020), Article 105376, 21 pp. 2. A. Dubickas and I. E. Pritsker, Weighted Fekete points on the real line and the unit circle, Computational Methods and Function Theory 20 (3-4) (2020), 403-429. 3. A. Dubickas, Maximal values of symmetric functions in distances between points, Mathematical Inequalities & Applications 23 (1) (2020), 329-339. 4. A. Dubickas, Inequalities between height and deviation of polynomials, Open Mathematics 19 (2021), 540-550.

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Board Chairman – assoc. prof. dr. Kristina Lapin