

**DOCTORAL (PHD) STUDIES
COURSE DESCRIPTION**

Course title	Field of science	Faculty	Institute
Analytic Number Theory	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. Arithmetical functions. Abel's summation formula. Asymptotic formulas.
2. Prime numbers. Asymptotic formula. Relation with zero distribution of the Riemann zeta-function.
3. Quadratic residues. Legendre symbol. The law of quadratic reciprocity.
4. Primes in an arithmetical progression. Dirichlet L -functions.
5. Various problems of analytic number theory.

Main literature

- Tom M. Apostol, *Introduction to Analytic Number Theory*. Springer-Verlag, New York, 1976.
- K. Chandrasekharan, *Introduction to Analytic Number Theory*. Springer-Verlag, Berlin, 1968.
- H. Iwaniec and E. Kowalski, *Analytic Number Theory*, Amer. Math. Soc. Colloq. Publ. 53, Amer. Math. Soc., Providence, 2004.
- M. Ram Murty, *Problems in analytic number theory. Second edition*, Springer, New York, 2008.

Consulting teacher	Scientific degree	Pedagogical name	Main publications in the field of science of the last 5 year period
Ramūnas Garunkštis	Dr. (HP)	Prof.	<ol style="list-style-type: none"> 1. R. Garunkštis, Zeros of the extended Selberg class zeta-functions and of their derivatives. Turkish J. Math. 43 (2019), no. 6, 2921–2930. 2. P. Drungilas, R. Garunkštis, A. Novikas, On second moment of Selberg zeta-function for $\sigma=1$. Results Math. 76 (2021), no. 4, Paper No. 184, 18 pp. 3. R. Garunkštis, Selberg zeta-function associated to compact Riemann surface is prime, Rev. Un. Mat. Argentina 62 (2021), 213–218.
Antanas Laurinčikas	Habil. dr.	Prof.	<ol style="list-style-type: none"> 1. A. Laurinčikas, Discrete universality of the Riemann zeta-function in short intervals. Appl. Anal. Discrete Math. 14 (2020), no. 2, 382–405. 2. A. Laurinčikas, Approximation of analytic functions by an absolutely convergent Dirichlet series. Arch. Math. (Basel) 117 (2021), no. 1, 53–63. 3. A. Laurinčikas, Approximation by generalized shifts of the Riemann zeta-function in short intervals. Ramanujan J. 56 (2021), no. 1, 309–322.

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Board Chairman – assoc. prof. dr. Kristina Lapin