

**DOCTORAL (PHD) STUDIES
COURSE DESCRIPTION**

Course title	Field of science	Faculty	Institute
Markov Chains	Mathematics (N 001)	Faculty of Mathematics and Informatics	Institute of Applied Mathematics
Study method	Number of credits	Study method	Number of credits
Lectures	0	Consultations	1
Individual work	4	Seminars	0

Course summary

1. Discrete Markov chains: transition probabilities, Markov chains, canonical Markov chain, Markov moments, absorption probabilities, renewal theorem, classification of states, periodicity, recurrent states and classes, drift criterion for recurrence, ergodic states and classes, invariant and ergodic probabilities, drift criterion for ergodicity, the ergodic theorem, the central limit theorem.
2. Markov chains in general state spaces: transition probabilities and Markov chain, irreducible Markov chains, small sets, ergodicity, geometric ergodicity, drift criteria, ergodic theorem, central limit theorem.

Main literature

1. S. P. Meyn, R. L. Tweedie. Markov chains and stochastic stability. Springer-Verlag, London, 1996.

Consulting teacher	Scientific degree	Pedagogical name	Main publications in the field of science of the last 5 year period
Vytautas Kazakevičius	Dr.	Assoc. Prof.	<ol style="list-style-type: none"> 1. Kazakevičiūtė, Agnė; Kazakevičius, Vytautas; Olivo, Malini. Conditions for existence of uniformly consistent classifiers // IEEE Transactions on information theory, 2017, vol. 63, issue 6, p. 3425-3432. 2. Kazakevičius, Vytautas. Subadditive ergodic theorem for double sequences // Journal of theoretical probability, 2021, vol. 34, p. 307-330.

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Board Chairman – assoc. prof. dr. Kristina Lapin