**Course:** Monte Carlo method

Teacher(s): Miodrag Đorđević

Course status: elective

ECTS: 12

Prerequisites: -

Goal

Acquiring knowledge on theory and application of Monte Carlo method

## Outcomes

Student is able to use tools and techniques of Monte Carlo method and to follow new acheivements in theory and application too.

## Contents

Theoretical teaching

Random numbers modelling using uniform continuous distribution. Quasi random numbers. Different random number generating methods: inverse probability integral transform, distribution decomposition, multidimensional uniform distribution with nonuniform marginals, acceptance-rejecting method and its variations. Random variables modelling. Integral approximation. Modelling of time series with correlated values. Markov processes. Bootstrap methods.

Practical teaching

Implementation of the theoretically analysed methods.

**Recommended bibliography** 

- 1. Gentle, J.E., Random number generation and Monte Carlo Methods, Springer, 2003.
- 2. Kroese, Taimre, Botev-Handbook of Monte Carlo Methods, Wiley, 2011.

Active teaching hours:	Theoretical: 4	Practical:
Methods of teaching		
Theoretical lectures and independent work of students during practical hours.		
Knowledge estimation: (max 100 points)		
Pre-exam: 50		
Exam: 50		