Study programme: PhD studies – Mathematics
Course name: Queueing Theory
Lecturer: Slobodanka Janković, Lenka Glavaš
Status: Optional for the module Statistics, actuarial and financial mathematics
ECTS: 9
Attendance prerequisites: Mathematical statistics, Stochastic processes
Course aims: Learning objective is: acquiring knowledge in the field of queueing theory.
Course outcome: Student has obtained skills, competence and knowledge in the field of queueing theory. Student is aware of possibilities and importance of queueing theory-driven thinking and acting in relation to the applications. Student is trained to achieve independence in scientific research in this area.
Course content: Problems of queueing theory. Incoming customer stream. Erlang distribution. Birth and death processes and their applications in queueing theory. Priority service. Markov models of systems. Systems with limited waiting time. Systems with bounded holding times. Stationary streams. Nonstationary streams. The Palm-Khinchin functions. Characteristics of stationary streams. The renewal function. Limit theorems for compound streams. Classification of queueing systems. The queue M|G|1. Nonstationary characteristics of a M|G|1 system. A system of the GI|M|m type. Systems with restrictions. Priority queueing.
Literature: B.V. Gnedenko, I. N. Kovalenko: *Introduction to queueing theory*, Birkhäuser Boston 1989.

Number of hours: 10	**Lectures:** 4	**Study research project**: 6

Teaching and learning methods: Group or individual tutorials.

Assessment (maximal 100 points)

Course assignments	**Number of points**	**Final exam**	**Number of points**
Homework	20	Written exam	-
Exercises / Tutorials	-	Oral exam	60
Colloquia	-	Written-oral exam	-
Tests	-		
Essay / Project	20		