Study programmes: PhD studies – Mathematics (Probability and statistics)

Course name: Stationary stochastic processes

Lecturers: Pavle N. Mladenović, Jelena Jocković

Status: Optional

ECTS: 9

Attendance prerequisites: Theory of stochastic processes

Course aims: Introducing students with general and specific results in the field of stationary stochastic processes.

Course outcome: Upon completion of the course, student is familiar with general and specific knowledge in the field of stationary stochastic processes, the possibilities of application in modeling random phenomena, and is capable of getting involved in scientific research in this field.

Course content:

Harmonic analysis of stationary stochastic processes. Random measures and integrals. Spectral representation. Correlation function and spectral measure of stationary processes. Ergodic theorems and the law of large numbers. Linear prediction of stationary sequences. Linear prediction of continuous-time stationary processes. Wide-sense stationary processes. Weak-dependency condition for stationary processes. Regularity. Strong mixing condition. Weak-dependency conditions for normal sequences. Central limit theorem for stationary processes. Method of proof. Possible limit distributions. Dispersion of sums. Central limit theorem for weakly dependent stationary sequences.

Literature:

1. **Ю.А. Розанов:** ***Стационарные случайные процессы,*** ФИЗМАТГИЗ, Москва, 1963.
2. **И.А. Ибрагимов:** ***Независимые и стационарно связаные величины,*** Наука, Москва, 1965.

Number of hours: 10	**Lecures: 4**	**Tutorials and research: 6**	**Laboratory:**

Teaching and learning methods: Frontal / Lectures / Exercises

Assessment (maximal 100 points)

Course assignments	points	Final exam	points
Lectures	-	Written exam	-
Exercises / Tutorials	20	Oral exam	-
Colloquia	-	Written-oral exam	60
Essay / Project	20		