Study program:Artificial intelligence

Name of the subject: Stochastic Processes

Teacher(s): Danijela Z. Rajter-Ćirić

Status of the subject:obligatory

Number of ECTS credits:6

Conditions:none

Subject goal

Becoming familiar with the basic concepts of stochastic analysis, stochastic differential equations and its applications.

Outcome of the subject

After taking and learning the content of the subject, student should possess the basic knowledge in the area, and to get the ability to apply it in the other subjects and areas

Subject content

Theory

Overview of basic probability theory. Conditional expectation - definition and properties. Stochastic processes. Classes of stochastic processes and their properties. Markov processes. Poisson process. Wiener processes. White noise process. Martingales.

Practical learning

Problem solving sessions.

Literature

S. Ross, *Introduction to probability models*, eight edition, Academic Press, 2003.

L. Evans, *An introduction to stochastic differential equations, version 1.2*, Department of Mathematics, UC Berkeley.

S. Roman, *Introduction to the Mathematics of Finance, From Risk Management to Options Pricing*, Springer-Verlag, 2004.

Jovan Mališić, *Random processes*, Gradjevinska knjiga, Belgrade, 1989. (in Serbian)

Number of active teaching classes	**Theoretical teaching:3**	**Practical teaching:2**

Method of carrying out the teaching

Lectures are presented using classical teaching methods. Exercises are used to practice and analyse typical problems and their solutions. The ability of application of theoretical knowledge is checked through independent solving of exercises on two colloquia. The final exam is oral and a student is supposed to demonstrate general understanding of the presented theoretical material.

Evaluation of knowledge (maximum number of points 100)

Pre-exam obligations	points	**Final exam**	points
Colloquia	50	Oral exam	50