Course: Formalization of uncertain reasoning

Course instructors: Zoran Ognjanović

Course type: elective

Credit points ECTS: 12

Prerequisites:

Course objectives:

Introduction to the basic ideas, concepts and results of the theory probability logics, as well as practical applications in uncertain knowledge representation.

Learning outcomes:

At the end of the course, the student will get acquainted with the basic ideas, concepts and results абоут пробабилить логице, and will be able to independently apply these ideas, concepts and results in scientific research within the same or some other scientific field.

Course description (outline):

Theoretical classes

Probability logics: models, non-compactness, non-recursive axiomatizations, completeness, decidability, classifications; conditional probability logics (based on Kolmogorov's and Definetti's approaches). Combining probabilistic and other logics: classical, intuitionistic, modal. Applications in the knowledge and beliefs representation, spatial-temporal-probabilistic logic, non-monotonic logic. *Practice classes*

References:

- 1. Joseph Halpern, Reasoning about Uncertainty. The MIT Press, Cambridge, 2003.
- 2. Zoran Ognjanović, Miodrag Rašković, Zoran Marković, Probability Logics: Probability-Based Formalization of Uncertain Reasoning, Springer, 2016.
- 3. Zoran Ognjanović (edt), Probabilistic Extensions of Various Logical Systems. Springer, 2020.
- 4. Zoran Ognjanović, Nenad Krdžavac, Uvod u teorijsko računarstvo, FON, Beograd, 2004.

Active teaching hours: 5	Theoretical classes: 5	Practice classes:
Methods of teaching:		
Classical teaching methods with video projectors and interaction with students. Students' knowledge		
is tested through homework and defense of seminar papers. The final oral exam checks the		
comprehensive understanding of the presented material.		
Grading structure (100 points)		
Pre-exam obligations:		
activity during classes 10 points,		
• seminar paper or oral seminar 30 points,		
Oral exam 60 points		