

DESCRIPTION OF THE COURSE OF STUDY

Course code	0719-2ID-C23-RP	
Name of the course in	Polish	Rachunek prawdopodobieństwa
	English	Probability Theory

1. LOCATION OF THE COURSE OF STUDY within the system of studies

1.1. Field of study	Data engineering
1.2. Mode of study	Full-time
1.3. Level of study	First-cycle degree
1.4. Profile of study*	General academic
1.5. Person/s preparing the course description	dr Magdalena Chrapek
1.6. Contact	Magdalena.Chrapek@ujk.edu.pl

2. GENERAL CHARACTERISTICS OF THE course of study

2.1. Language of instruction	English
2.2. Prerequisites*	Basics of Mathematics, Mathematics 1

3. DETAILED CHARACTERISTICS OF THE COURSE OF STUDY

3.1. Form of classes	Lectures, classes	
3.2. Place of classes	Courses in the teaching rooms of UJK	
3.3. Form of assessment	Exam (lectures), credit with grade (classes)	
3.4. Teaching methods	Lectures – informative lectures, classes – problem methods, case studies, discussion	
3.5. Bibliography	Required reading	Carlton M. A. Devore J. L. Probability with applications in engineering, science, and technology, Springer 2017
	Further reading	Ugarte M. D., Militino A. F., Arnholt A.T. Probability and statistics with R. CRC Press 2008.

4. OBJECTIVES, SYLLABUS CONTENT AND INTENDED LEARNING OUTCOMES

4.1. Course objectives <i>(including form of classes)</i> Lectures: C1. To give students the knowledge of major concepts and theorems of probability theory Classes: C1. Developing skills to apply probabilistic methods C2. Developing skills to plan own work and the precision of oral as well as written statements	
4.2. Detailed syllabus <i>(including form of classes)</i> Lectures Probability space. Axiomatic definition of probability. Properties of probability. Conditional probability. The law of total probability. Bayes' rule. Independence of random events. One-dimensional random variables and their probability distributions. Cumulative distribution function. Functions of a random variable. Parameters of the random variables. Examples of discrete and continuous distributions. Multidimensional random variables. Limit theorems. Classes Basic counting principles and calculating of probabilities according to the classical definition of probability. Assessing probabilities in infinite spaces of elementary events. Conditional probability. The applications of the law of total probability and Bayes' rule. Independence of random events. One-dimensional random variables and their probability distributions. Distribution of the probability distribution. Functions of a random variable. Parameters of the random variable distribution. Multidimensional random variables. Applications of limit theorems.	

4.3 Intended learning outcomes

Code	A student, who passed the course	Relation to learning outcomes
within the scope of KNOWLEDGE knows and understands:		
W01	the classical and axiomatic definition of probability, concepts such as conditional probability, independence of events, random variable, probability distribution, cumulative distribution function, parameters of the probability distribution, as well as the main theorems and properties of probability	ID1A_W2
W02	the definitions and properties of the main discrete and continuous distributions, as well as examples of limit theorems	ID1A_W2
within the scope of ABILITIES is able to:		
U01	create and analyze a probabilistic model of a random experiment; apply the total probability formula and Bayes' formula	ID1A_U01 ID1A_U06
U02	analyze the properties of discrete and continuous distributions	ID1A_U01 ID1A_U06
U03	use limit theorems to estimate probabilities	ID1A_U01 ID1A_U06
within the scope of SOCIAL COMPETENCE is prepared to:		
K01	plan own work and the precision of oral as well as written statements	ID1A_K01

4.4. Methods of assessment of the intended learning outcomes																					
Teaching outcomes (code)	Method of assessment (+/-)																				
	Exam written*			Test*			Project*			Effort in class*			Self-study*			Group work*			Others* e.g. standardize d test used in e-learning		
	Form of classes			Form of classes			Form of classes			Form of classes			Form of classes			Form of classes			Form of classes		
	L	C	...	L	C	...	L	C	...	L	C	...	L	C	...	L	C	...	L	C	...
W01	+																				
W02	+																				
U01	+				+					+											
U02	+				+					+											
U03	+									+											
K01										+											

*delete as appropriate

4.5. Criteria of assessment of the intended learning outcomes		
Form of classes	Grade	Criterion of assessment
lecture (L)	3	at least 50% and not more than 60% of the total number of available points
	3,5	more than 60% and not more than 70% of the total number of available points
	4	more than 70% and not more than 80% of the total number of available points
	4,5	more than 80% and not more than 90% of the total number of available points
	5	more than 90% of the total number of available points
classes (C)*	3	at least 50% and not more than 60% of the total number of available points
	3,5	more than 60% and not more than 70% of the total number of available points
	4	more than 70% and not more than 80% of the total number of available points
	4,5	more than 80% and not more than 90% of the total number of available points
	5	more than 90% of the total number of available points

5. BALANCE OF ECTS CREDITS – STUDENT'S WORK INPUT

Category	Student's workload	
	Full-time studies	Extramural studies
NUMBER OF HOURS WITH THE DIRECT PARTICIPATION OF THE TEACHER /CONTACT HOURS/	60	

Participation in lectures*	30	
Participation in classes	30	
INDEPENDENT WORK OF THE STUDENT/NON-CONTACT HOURS/	40	
Preparation for the classes	20	
Preparation for the exam/test*	20	
TOTAL NUMBER OF HOURS	100	
ECTS credits for the course of study	4	

**delete as appropriate*

Accepted for execution (date and legible signatures of the teachers running the course in the given academic year)

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