STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Theory of probability**		Code **1010341741010341000**
Field of study **Mathematics in technology**	Profile of study (general academic, practical) **general academic**	Year /Semester **2 / 4**
Elective path/specialty **-**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**
Cycle of study: **First-cycle studies**	Form of study (full-time,part-time) **full-time**	
No. of hours Lecture: **30** Classes: **30** Laboratory: **-** Project/seminars: **-**		No. of credits **3**
Status of the course in the study program (Basic, major, other) **other**	(university-wide, from another field) **university-wide**	
Education areas and fields of science and art **technical sciences**		ECTS distribution (number and %) **3 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Well understands the role and the importance of proof in mathematics, as well as the concept of importance of significance. Know the basic claim of the known branches of mathematics. Familiar with the basics of calculus and calculus of functions of one variable and multiple variables, understand how to use in other branches of mathematics.
2	**Skills**	In a way that is understandable, in speech and in writing, to present the correct mathematical reasoning, formulate theorems and definitions, uses the account sentences and quantifiers, correctly use the quantifiers in everyday language, can talk about the mathematical issues understandable, everyday language. He knows how to lead easy and medium difficult evidence method of induction complete; can define functions and recursive relationships
3	**Social competencies**	Familiar with the limitation of their own knowledge and understand the need for further education.

Assumptions and objectives of the course:

1. To learn the basic methods for probabilistic
2. Develop the skills of using these methods to solve practical engineering problems.
3. Shaping of the students ability to work in a group.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Has knowledge of probability necessary to the description and analysis of the operation and technical systems and fundamental phenomena that occur in them. - [K_W08]

Skills:

1. Uses the term a probability space; can provide various examples of discrete and continuous probability distributions, and discuss selected random experiments and mathematical models in which these timetables; familiar with the practical applications of basic schedules, know how to apply the formula for the conditional probability, total and Bayesian pattern. - [K_U15]
2. Can designate the parameters of the distribution of the random variable with distribution of discrete and continuous; can apply the limit theorem and law of large numbers to estimate probabilities. - [K_U16]

Social competencies:

1. Can accurately formulate questions, to deepen your understanding of the topic or find the missing elements of reasoning, correctly resolves dilemmas associated with the use of the profession. - [K_K02]
2. Understands and appreciates the importance of fairness in the activities of their own and of others; progressed ethically; understand the validity of and understand non-technical aspects and effects of engineering activities, including its impact on the environment and the consciousness of responsibility for decisions. - [K_K04]

Assessment methods of study outcomes

The effects of education presented above are verified as follows:

Cavity assessment:

a) in terms of exercises:

- on the basis of two colloquia,
- oral answers,
- on an array of sample tasks;

b) in terms of lectures:

- on the basis of the oral answers to questions about a material

theoretical and practical examples

Rating Summary:

a) in terms of exercise to verify the established learning outcomes is carried out by:

- the average percentage obtained from 2 colloquia
- if the average is less than 50% of a student writes colloquium of all the material.

b) for the lecture:

- the written exam that combines theoretical and practical issues.

Course description

Get to know the area of probabilistic, as a model of experience, random actions on events and probabilities: axiomatic, geometric, classical and conditional. An overview of the problem of independence and depending on the event. The practical application of the fortresses. about the truths. total and fortresses. Bayes. Systematizing the combinatorial methods. Definition and overview of the one-dimensional random variables with values of the actual type of discrete and continuous. Introduction and overview of the property characteristics of functional and numerical random variables. To review the underlying distributions of discrete type and type. Limit theorem and law of large numbers. Characterization of random variables. The introduction of functions of one variable. Timetables cut off and mixed. A mixture of distributions. Specific features. The introduction of the two-dimensional discrete and continuous random variables. Characteristics and regression lines and and II-it kind. The two random variables. Two-dimensional normal distribution.

Applied methods of education: lectures and exercises.

Lecture supplemented with a multimedia presentation of the supplied examples on the blackboard, during a lecture initiate discussion, take into account the activity of students during class when exposed final evaluation.

Exercises solving sample tasks on the board and initiating discussion of solutions.

Updated 2017 / 2018

Basic bibliography:

1. Krysicki, Bartos j., Dyczka., Krolikowski, Wasilewski m., probability and mathematical statistics in the tasks. I and II. Wydawnictwo PWN, Warsaw, Poland, 2010.

2. H. Jasiulewicz, Kordecki, probability and mathematical statistics. Examples and tasks. Publishing House of the GiS, Wrocław, 2002.

3. Kordecki, probability and mathematical statistics. Definitions, theorems, formulas. Publishing House of the GiS, Wrocław, 2002.

4. Plucińska Agnieszka, Edmund Pluciński - Probability. WNT, Warszawa 2000.

Additional bibliography:

1. . Feller, William: Introduction to probability. PWN, T1, 2008, T2 2009.

2. Bobrowski Dobiesław: Probabilistyka in technical applications. WNT, Warszawa 1986.

3. Mirosław Krzyśko : Lectures on probability theory. WNT 2000.

Result of average student's workload

Activity	Time (working hours)

1. Participation in lectures	30
2. Participate in exercises	30
3. Prepare for exercise	3
4. Complete (under work) tasks with exercise	1
5. Consulting related to the implementation of the learning process: with exercises and lectures	2
6. Preparation for the colloquiums with exercise	4
7. Exam preparation of lecture	4
8. The exam	2

Student's workload

Source of workload	hours	ECTS
Total workload	76	3
Contact hours	64	3
Practical activities	0	0