STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Probability**		Code **1010534111010347582**

Field of study **Automatic Control and Robotics**	Profile of study (general academic, practical) **general academic**	Year /Semester **1 / 1**

Elective path/specialty **-**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**

Cycle of study: **First-cycle studies**	Form of study (full-time,part-time) **part-time**

No. of hours				No. of credits **4**
Lecture: **16**	Classes: **16**	Laboratory: **-**	Project/seminars: **-**	

Status of the course in the study program (Basic, major, other) **basic**	(university-wide, from another field) **university-wide**

Education areas and fields of science and art **technical sciences**	ECTS distribution (number and %**)** **4 100%**

Responsible for subject / lecturer:

dr inż. Barbara Popowska
email: barbara.popowska@put.poznan.pl
tel. 61 665 2815
Faculty of Electrical Engineering
ul. Piotrowo3a, 60-965 Poznań

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	A student starting this subject should have basic knowledge of mathematics
2	**Skills**	It should have the ability to solve basic problems of mathematical analysis, set theory and logic, the ability to use the calculator and the ability to acquire information from the indicated sources.
3	**Social competencies**	He should also understand the necessity to broaden his competences, be ready to cooperate within the team. In addition, in the field of social competence, the student must present such attitudes as honesty, responsibility, perseverance, cognitive curiosity, creativity, personal culture, respect for other peop

Assumptions and objectives of the course:

-learning about probabilistic methods and the ability to use them to solve practical engineering problems.

-application of mathematical statistics methods and tools.

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

Knowledge:

1. has expanded and deepened knowledge in the field of mathematics including algebra, geometry, analysis, probability and elements of discrete mathematics and logic, including mathematical methods and numerical methods necessary for the description and analysis of linear and basic non-linear dynamic and static systems - [K_W1+++]

Skills:

1. can obtain information from literature, databases and other sources also in a selected foreign language - [K_U1+++]

Social competencies:

1. understands the need and knows the possibilities of continuous training - raising professional, personal and social competences, can inspire and organize the learning process of other people - [K_K1++]

2. can think and act in an entrepreneurial way - [K_K6++]

Assessment methods of study outcomes

-lectures

final written colloquium on theoretical issues,

-exercises

written (final) colloquium, continuous assessment of class activity.

Course description
-Probabilistic space
-Different definitions of the probability: axiomatic, classic, geometric, conditional, total, Bayesian formula, independence
-Random variable one-dimensional discrete
-Random variable one-dimensional continuous
-Discreet decompositions
-Continuous decompositions
-Descriptive statistics elements
-Theory of estimation
-Verification of statistical hypotheses
Applied learning methods: lectures and exercises.
Lecture with multimedia presentation supplemented with examples given on the board, during the lecture initiating the discussion, the students' activity during the class is taken into account when issuing the final grade.
Exercises are solving sample tasks on the board and initiating discussions on solutions.

Basic bibliography:

1. Krysicki Włodzimierz i inni - Rachunek prawdopodobieństwa i statystyka matematyczna w zadaniach, cz. I i cz. II. PWN Warszawa.2010

2. Kordecki Wojciech - Rachunek prawdopodobieństwa i statystyka matematyczna. Definicje, twierdzenia, wzory. Oficyna Wydawnicza GiS, Wrocław 2010.

3. Jasiulewicz Helena, Kordecki Wojciech - Rachunek Prawdopodobieństwa i statystyka matematyczba. Przykłady i zadania.Oficyna Wydawnicza GiS, Wrocław 2010.

4. Bobrowski, Łybacka - Wybrane metody wnioskowania statystycznego. WPP,Poznań 2006.

Additional bibliography:

1. Plucińska Agnieszka, Edmund Pluciński - Probabilistyka. WNT, Warszawa 2000

2. Bobrowski Dobiesław - Probabilistyka w zastosowaniach technicznych. WNT, Warszawa 1986.

3. Krzyśko Mirosław - Wykłady z teorii prawdopodobieństwa. WNT 2000.

Result of average student's workload

Activity	Time (working hours)
1. participation in lectures and exercises	45
2. preparation for exercises	10
3. completing (as part of your own work) the tasks of the exercises	14
4. participation in consultations related to the implementation of the learning process: from exercises and lectures	2
5. preparation for the colloquium of exercises	14
6. familiarization with the indicated literature / didactic materials (10 pages of scientific text = 1 hour), 50 pages = 5h	5
7. preparation for the written exam from the lecture	15

Student's workload

Source of workload	hours	ECTS
Total workload	105	4
Contact hours	47	2
Practical activities	53	2