POZNAN UNIVERSITY OF TECHNOLOGY



EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

COURSE DESCRIPTION CARD - SYLLABUS

Course name

Probabilistic methods in electronics and telecommunications [S1EiT1>MPwEiT]

Course			
Field of study Electronics and Telecommunication	ns	Year/Semester 1/1	
Area of study (specialization)		Profile of study general academic	C
Level of study first-cycle		Course offered in Polish	Ι
Form of study full-time		Requirements compulsory	
Number of hours			
Lecture 30	Laboratory classe 0	es	Other 0
Tutorials 15	Projects/seminars 0	5	
Number of credit points 4,00			
Coordinators		Lecturers	
prof. dr hab. inż. Maciej Stasiak maciej.stasiak@put.poznan.pl			

Prerequisites

The student should have a basic knowledge of mathematics with basic set theory, combinatorics and mathematical analysis. He should also have the ability to think logically and understand the necessity of expanding knowledge and be open to understand the problems of the surrounding reality.

Course objective

The aim of the course is to familiarise students with the basics of probability and probabilistic methods used in engineering practice of electronics and telecommunications.

Course-related learning outcomes

Knowledge:

Has a systematic knowledge of theory of probability.

Skills:

Is able to extract information from English or Polish language literature, databases and other sources. Is able to integrate and interpret the obtained information, draw conclusions and justify opinions. Is able to use theory of probability concepts to solve basic problems in electronics and telecommunication.

Social competences: Is aware of the limitations of his/her current knowledge and skills. Is committed to further self-study.

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Learning outcomes presented above are verified as follows:

Knowledge acquired during the tutorials is verified on the basis of a test. Students solve 5-6 tasks, scored differently depending on the level of difficulty of the problems. Passing threshold: 50% of points. Depending on the results, the scoring may change.

Knowledge acquired during lecture is verified on the basis of a test. The test includes 25-30 equally scored questions. Each question has 4 answers, one of which is true. Passing threshold: 50% of points (correct answers). Depending on the results, the scoring may change. In the case of a small number of students, the credit may be given on the basis of a direct conversation with the lecturer.

Programme content

The program covers issues in the field of probability theory and statistics: basics of data analysis, basic notions and rules of probability theory, characteristics of one-dimensional random variables, the most important discrete and continuous distributions, characteristic functions and generating functions, characteristics of two-dimensional random variables, regression, laws of large numbers and limit theorems, basic notions and elements of statistics, examples of distributions used in statistics, elements of statistical estimation and inference, confidence intervals, introduction to stochastic processes, fundamentals of modeling of network systems.

Course topics

none

Teaching methods

1. Lecture: multimedia presentation illustrated with examples.

2. Tutorials: multimedia presentation illustrated with examples; solving problems given by the teacher.

Bibliography

Basic

1. Bobrowski D., Łybacka K., Wybrane metody wnioskowania statystycznego, Wydawnictwo Politechniki Poznańskiej, Poznań, wydania 1988, 1995, 2001, 2002, 2004, 2006.

2. Plucińska A., Pluciński E., Probabilistyka: procesy stochastyczne, statystyka matematyczna, rachunek prawdopodobieństwa, WNT, Warszawa, wydania 2000, 2005, 2006, 2015, 2017.

3. Krysicki W., Bartos J., Dyczka W., Królikowska K., Wasilewski M., Rachunek prawdopodobieństwa i statystyka matematyczna w zadaniach, część I i II, PWN,Warszawa, wydania 1998, 2000, 2002, 2007. Additional

1. Teaching materials for lectures, available to students in the form of pdf files.

2. Feller W., Wstęp do rachunku prawdopodobieństwa, PWN, Warszawa, 2006.

3. Benjamin J.R., Cornell C.A., Rachunek prawdopodobieństwa, statystyka matematyczna i teoria decyzji dla inżynierów, WNT, Warszawa, (dowolne wydanie)

4. Bobrowski D., Probabilistyka w zastosowaniach technicznych, WNT, Warszawa, 1986.

5. Stasiak M, Głąbowski M., Hanczewski S., Zwierzykowski P.: Podstawy inżynierii ruchu i wymiarowania sieci teleinformatycznych, Wydawnictwo Politechniki Poznańskiej, Poznań, 2009.

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
Classes requiring direct contact with the teacher	55	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	45	2,00