POZNAN UNIVERSITY OF TECHNOLOGY

EUROPEAN CREDIT TRANSFER AND ACCUMULATION SYSTEM (ECTS)

pl. M. Skłodowskiej-Curie 5, 60-965 Poznań

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Statistics/Probabilistics

Course

Field of study	Year/Semester
Aerospace Engineering	1/1
Area of study (specialization)	Profile of study
	general academic
Level of study	Course offered in
First-cycle studies	Polish
Form of study	Requirements
full-time	compulsory

Number of hours

Lecture	Laboratory classes	Other (e.g. online)
15	0	0
Tutorials	Projects/seminars	
15	0	

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

dr Ewa Bakinowska

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Wydział Autoamtyki, Robotyki i Elektrotechniki

Piotrowo 3A, 60-965 Poznań

Responsible for the course/lecturer:

Prerequisites

The student has basic knowledge of combinatorics and theory of probability resulting from the school program. The student has basic knowledge of mathematical analysis (differential calculus of functions of one variable, integral calculus of functions of one variable and basics of matrix algebra). He can think logically. The student is aware of the learning purpose.

The student is able to apply the language of mathematics (differential and integral calculus) to describe simple problems in technology. Is able to obtain information from literature.

Course objective

The aim of the course is to familiarize students with the basic issues of statistics in order to solve simple practical problems.

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Course-related learning outcomes

Knowledge

The student knows the basic probability distributions. The student knows the basic concepts of mathematical statistics. The student knows various methods of statistical inference. Has an ordered, theoretically founded knowledge of mathematics used to analyze the results

Skills

the student can use theoretical probability distributions. The student is able to analyze and interpret statistical data. The student is able to use the methods and tools of mathematical statistics in engineering practice

Social competences

is aware of the social role of a technical university graduate, in particular understands the need to formulate and provide the society, in an appropriate form, with information and opinions on engineering activities, technological achievements, as well as the achievements and traditions of the engineer profession

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Assessment of knowledge and skills acquired during the lecture is verified on the basis of a written test.

Tutorials: The assessment of knowledge and skills acquired in tutorials is verified on the basis of written tests.

Programme content

LECTURE

1. Probability space.

2. Axiomatic definition of probability, classical probability.

3. Conditional probability.

4. Discrete random variable.

5. Continuous random variable.

6. Elements of descriptive statistics.

7. Covariance of sample and sample linear correlation coefficient.

8. Point estimation.

9. Confidence intervals.

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10. Tests of significance for one population, expected value.

11. Linear regression.

Tutorials:

1. Conditional probability.

2. Discrete random variable.

3. Continuous random variable.

4. Elements of descriptive statistics.

5. Covariance of sample and sample linear correlation coefficient.

6. Point estimation.

7. Confidence intervals.

8. Tests of significance for one population, expected value.

9. Linear regression.

Teaching methods

A lecture with a multimedia presentation supplemented with current solutions of practical examples. Interactive lecture with the formulation of current questions for a group of students. Students actively participate in the lecture. Each presentation of a new topic is preceded by a reminder of the content related to the discussed issue (e.g. content known to students from other subjects).The main content of each lecture is posted on eCourses.

Tutorials: Students are given problems to be solved during tutorials. The needed theory, formulas and graphs are made available to students. The tasks are solved together with the teacher with the active participation of students.

Bibliography

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Basic

1. D. Bobrowski, (1986) Probabilistyka w zastosowaniach technicznych, Wydawnictwo Naukowo Techniczne.

2. D. Bobrowski, K. Maćkowiak-Łybacka, (2006) Wybrane metody wnioskowania statystycznego, Wydawnictwo Politechniki Poznańskiej.

3. J. Koronacki, J. Melniczuk (2001) Statystyka dla studentów kierunków technicznych i przyrodniczych. WNT, Warszawa.

Additional

1. Plucińska A., Pluciński E., Probabilistyka, Wydawnictwo WNT, Warszawa

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,0
Classes requiring direct contact with the teacher	30	1,5
Student's own work (literature studies, preparation for tutorials, preparation for tests, preparation for passing the lecture) [1]	20	0,5

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[1] delete or add other activities as appropriate