COURSE DESCRIPTION CARD - SYLLABUS

Course name

Fundamentals of Statistics

Course

Field of study

Logistics

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

2/3

Profile of study

general academic

Course offered in

Polish

Requirements

compulsory

Number of hours

Lecture

15

Laboratory classes

Other (e.g. online)

Tutorials

15

Projects/seminars

Number of credit points

2

Lecturers

Responsible for the course/lecturer:

Ph.D., D.Sc. Karol Andrzejczak, University Professor

Mail to: karol.andrzejczak@put.poznan.pl

Phone: 61 665 23 49

Faculty of Automatic Control, Robotics and Electrical Engineering

ul. Piotrowo 3A, 61-138 Poznań

Responsible for the course/lecturer:

Prerequisites

The student starting thiscourse should have basic knowledge of mathematical logic, set theory, number series, and differential and integral calculus of functions of one variable.

Course objective

The aim of the course is to provide students with basic knowledge of probability and mathematical statistics necessary to correctly solve problems with random events as well as to put and verify statistical hypotheses in logistic issues using appropriately selected tests. Developing students' skills in building scenarios for solving practical problems using the known definitions, properties and theorems.

Course-related learning outcomes

Knowledge

1. Student knows the basic issues of mathematics, probability and statistics in the study of the structure of economic and logistic phenomena [P6S_WG_04]

Skills

1. Student is able to select appropriate tools and methods to solve a problem within mathematics, probabilistics and statistics, and use them effectively [P6S_UO_02]

2. Student is able to identify changes in requirements, standards, regulations, technical progress and labor market reality in the context of probabilistics and statistics, and on their basis determine the need to supplement knowledge [P6S_UU_01]

Social competences

1. Student is aware of initiating activities related to the formulation and transfer of information and cooperation in society in the area of statistics and probabilistics [P6S_KO_02]

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lecture: Assessment of the acquired theoretical knowledge and the ability to apply it on the basis of two tests. Each test consists of 10-15 open questions/tasks. Passing threshold 45% of points.

Tutorial: Half and final colloquium on the ability to solve variously scored tasks. Each test for 40 points. Activity in the classroom 20 points. Completion of exercises from a total of 45 points.

Programme content

Lecture: Probabilistic space as a model of experiments and random phenomena. Algebraic operations on events. One- and two-dimensional random variables and their functional and numerical characteristics. Selected distributions of discrete and continuous type and their practical applications. Basic theorems applicable in engineering statistics. Point and interval parameter estimation of the studied features in populations. Formulation and verification of parametric and non-parametric statistical hypotheses. Correlation and regression analysis.

Tutorial: The scope of the topics and issues covered is consistent with the theory oresented yn the following lectures. Students solve practical tasks and problems related to simple engineering issues, in particular logistic, with the use of the definitions, properties, theorems and methodology of cognitive proceedings and generalization of the ontained results.

Teaching methods

Lecture: Lectures with shared multimedia presentations of the theory supplemented by practical examples solved on the board. Lectures conducted in an interactive way with the formulation of questions by both the lecturer and students.

Tutorial: Auditorium classes consist of the blackboard solving open practical problems by students as well as discussion and formulation of contextual conclusions. Students receive sets of tasks in advance. Students' activity during classes is taken when assigning the final grade.

Bibliography

Basic

1. Krysicki W., Bartos J., Dyczka W., Królikowska K., Wasilewski M., Rachunek prawdopodobieństwa i statystyka matematyczna w zadaniach, cz. I i II, Wydawnictwo Naukowe PWN, Warszawa 1999.

2. Aczel A.D., Statystyka w zarządzaniu. Wydawnictwo Naukowe PWN, Warszawa 2000.

3. Bobrowski D., Łybacka K., Wybrane metody wnioskowania statystycznego, Wydawnictwo Politechniki Poznańskiej, Poznań 1999.

Additional

1. Bobrowski D., Probabilistyka w zastosowaniach technicznych, WNT, Warszawa 2017.

2. Devore Jay L., Probability and Statistics for Engineering and the Sciences, Cengage Learning, Inc., 2016.

3. Andrzejczak K., Statystyka elementarna z wykorzystaniem systemu Statgraphics, Wydawnictwo Politechniki Poznańskiej, Poznań 1997.

Breakdown of average student's workload

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

[1] delete or add other activities as appropriate