STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Theory of probability		**1010312411010341000**

Field of study	Profile of study (general academic, practical)	Year /Semester
Power Engineering	**(brak)**	**1 / 1**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
-	**Polish**	**obligatory**

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

No. of hours				No. of credits
Lecture: **30**	Classes: **15**	Laboratory: **-**	Project/seminars: **-**	**4**

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

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

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Student knows basic notions in calculus, set theory and logic.
2	**Skills**	Student can operate a calculator and find and use proposed literature.
3	**Social competencies**	Student recognizes the necessity in deepening his knowledge. Student is conscious to operate in creative and rational way. Student is active durig classes.

Assumptions and objectives of the course:

-to acquire basic statistical and probabilistic methods and develop the ability to use these methods to solve practical engineering problems.

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

Knowledge:

1. . Student has a basic knowledge of probability theory, including the rights of probability useful to solve practical engineering problemes - [K_W01 +++]

2. Student has a basic knowlegde of descriptive and mathematical statistics useful to solve practical engineering problmes - [K_W01 +++]

3. Student knows the basic techniques and tools used to solve simple engineering tasks using information technology and computer support - [K_W01 +++]

Skills:

1. Student is able to interpret the information from literature, databases and other seleted sources and to draw conclusions and formulate and justify opinions - [K_K10 +]

2. Student can use information and communication technology for the tasks of typical engineering activites. - [K_K10 +]

3. Student is able to select and apply appropriate methods and tools and to use them effectively to solve tasks of mathematical statistics - [K_K10 +]

Social competencies:

1. Student is able to argue the necessity of continuous learing - [K_K01 +]

2. Student is aware of their responsibility for their own work and is willing to obey the rules of collective work and to take responsibility for collaborative tasks. - [K_K01 +]

3. Student can see cause and effect relationship in achieving the set of goals and rank alternative or competitive tasks. - [K_K01 +]

Assessment methods of study outcomes

Forming score:
on the basis of written tests.
Summary score:
the average points obtained by the witten tests.

Course description

1.Combinatorics. Evets. (Lecture)
2.Probability space. (Lecture)
3.Axiomatic definition of probability: classical probability. (Lecture and Classes)
4.Conditional probability, Bayesian model. (Lecture and Classes)
5.Random variable, distribution function, expected value, variance. (Lecture)
6.Discrete random variable. Discrete distributions. (Lecture and Classes)
7.The continuous random variable. Continuous distributions. (Lecture and Classes)
8.The two-dimensional random variable (Lecture)
9.The independence of random variables.(Lecture)
10.Elements of descriptive statistics. (Lecture and Classes)
11.Estimation. (Lecture)
12.Confidence intervals. (Lecture and Classes)
13.Tests of significance (One population expected value (mean), variance, proportion). (Lecture and Classes)
14.Tests of significance (Two populations expected values (mean), variances, proportions). (Lecture)
15.Nonparametric tests
16.Linear regression. Testing the significance of regression. (Lecture)
17.Analysis of variance. (Lecture)

Basic bibliography:

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.
4. W. Kordecki (2010) Rachunek prawdopodobieństwa i statystyka matematyczna, Definicje, twierdzenia, wzory, Oficyna Wydawnicza GiS.
5. H. Jasiulewicz, W. Kordecki, (2003) Rachunek prawdopodobieństwa i statystyka matematyczna, Przykłady i zadania Oficyna Wydawnicza GiS

Additional bibliography:

1. Plucińska A., Pluciński E., Probabilistyka, Wydawnictwo WNT, Warszawa
2. R. L. Scheaffer, J. T. McClave (1995) Probability and Statistics for Engineers, Duxbury

Result of average student's workload

Activity	Time (working hours)
1. Lectures participation	30
2. Classes participation	15
3. Tests and exams preparation	45
4. Homework preparation	10
5. Classes preparation	10

Student's workload

Source of workload	hours	ECTS
Total workload	110	4
Contact hours	45	2
Practical activities	15	2