# STUDY MODULE DESCRIPTION FORM

| Name of the module/subject | | Code |
|---|---|---|
| **Mathematical statistics** | | **1010604151010344571** |
| Field of study: **Mechanical Engineering** | Profile of study (general academic, practical): **(brak)** | Year /Semester: **3 / 5** |
| 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: Lecture: **14** Classes: **6** Laboratory: **-** Project/seminars: **-** | | No. of credits: **2** |
| Status of the course in the study program (Basic, major, other): **(brak)** | (university-wide, from another field): **(brak)** | |
| Education areas and fields of science and art: **technical sciences** | | ECTS distribution (number and %): **2 100%** |

## Responsible for subject / lecturer:

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## Prerequisites in terms of knowledge, skills and social competencies:

| | | |
|---|---|---|
| 1 | **Knowledge** | Student has a knowledge of combinatorics and probability calculus at the secondary school level.<br>Student has a basic knowledge of Mathematics 1. |
| 2 | **Skills** | Student is able to think logically.<br>Student is able to use a calculator. |
| 3 | **Social competencies** | Student understands the necessity of learning and usefulness of acquired knowledge. |

## Assumptions and objectives of the course:

The aim of this course is to introduce students to selected topics of probability theory and mathematical statistics. Students acquire skills to apply probabilistic and statistical methods to solve technical problems.

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

### Knowledge:

1. Student knows the basic probability distributions. Student knows the basic methods of statistical inference. - [K1A_W01]

### Skills:

1. Student is able to apply theoretical probability distributions. Student is able to apply the methods of mathematical statistics in engineering practice. - [K1A_U01]

### Social competencies:

1. Student understands the need for lifelong learning. Student understands the usefulness of statistical methods. - [K1A_K01]

## Assessment methods of study outcomes

Written exam. Classes-written test (1 or 2).

## Course description

Probability system.
Conditional probability.
Univariate probability distributions.
Basic concepts of descriptive statistics.
Estimation.
Confidence intervals.
Hypothesis verification.
Bivariate probability distributions.
Correlation analysis.
Regression analysis.

## Basic bibliography:

1. Bobrowski D., Maćkowiak-Łybacka K., Wybrane metody wnioskowania statystycznego, Wydawnictwo Politechniki Poznańskiej, Poznań.
2. Jasiulewicz H., Kordecki W., Rachunek prawdopodobieństwa i statystyka matematyczna. Przykłady i zadania, Oficyna Wydawnicza GiS, Wrocław.
3. Kordecki W., Rachunek prawdopodobieństwa i statystyka matematyczna. Definicje, twierdzenia, wzory, Oficyna Wydawnicza GiS, Wrocław.

## Additional bibliography:

1. Bobrowski D., Probabilistyka w zastosowaniach technicznych, WNT, Warszawa, 1986.
2. Krysicki W., Bartos J., Dyczka W., Królikowska K., Wasilewski M., Rachunek prawdopodobieństwa i statystyka matematyczna w zadaniach, część I i II, PWN, Warszawa.
3. Plucińska A., Pluciński E., Probabilistyka, WNT, Warszawa.

## Result of average student's workload

| Activity | Time (working hours) |
|---|---|
| | |

## Student's workload

| Source of workload | hours | ECTS |
|---|---|---|
| Total workload | 90 | 2 |
| Contact hours | 45 | 0 |
| Practical activities | 15 | 0 |