

SYLLABUS

1. Course title:

Statistics in mechanical engineering

2. Code:

(max. 20 characters)

3. Cycle of study:

1

4. ECTS credits:

3

5. Type of course: Mandatory Elective**6. Prerequisites:**

None

7. Class restrictions:

None

8. Duration / semester:

1

4

9. Weekly contact hours:

9.1. Lectures:

2

9.2. Seminars:

1

9.3. Laboratory/Practice classes:

0

10. Faculty:

Faculty of Mechanical Engineering

11. Department/study program:

Production Engineering, Energy Engineering, Mechatronics

12. Lecturer:

Indira Buljubašić, Associate Professor

13. Lecturer's e-mail:

indira.buljubasic@untz.ba

14. Web site:

www.mf.untz.ba

15. Course aims:

Getting basic knowledge in probability theory and statistics, the application of practical engineering problems.

16. Learning outcomes:

At the end of the semester/course successful students, who during the entire semester performed their duties continuously, will be able to:

- define random variables, discrete and continuous;
- se different mean values;
- use different indicators of dispersion and distribution models of random variable,
- arrange statistical set,
- define and use different patterns of basic statistical set,
- make a hypothesis;
- perform probability calculation for mechanical constructions and
- perform statistical analysis of a given set of data.

17. Course content:

- Introduction, the role and importance of statistics in mechanical engineering;
- Basics of probability theory;
- Random variables, discrete and continuous;
- Basic distribution discrete and continuous variable;
- The sum of random variables, central limit theorem;
- Random sampling and display data;
- Confidence intervals, regression, correlation;
- Hypothesis testing;
- The concept of reliability design with a given reliability;
- Probability calculation for mechanical constructions;
- Statistical analysis of a given set of data;
- Case Study;
- Generation of random variables, Monte Carlo simulation.
- Statistical quality control, control charts.

18. Learning methods:

Lectures will be realized through the classical education as well as video presentations, while exercises will be realized through solving tasks from the fields mentioned in syllabus.

19. Assessment methods:

During the semester, students will have exams in the form of two tests with questions of theory and short computation tasks. Each test carries 20 points. The final exam includes written/problem solving and oral/theory part while the written exam is eliminating.

20. Assessment components:

- The presence in classes (lectures 5 + practice 5) -10 points,
- Tests with issues of theory and problem solving tasks (2 x 20 points) - 40 points
- Final exam (written and oral) - 50 points

21. Required reading list:

1. Suljagić S.: "Vjerovatnost i statistika", Zagreb, 2002 god.
2. Elazar S.: "Matematička statistika", Sarajevo, 1972.god.
3. Montgomery D.: "Applied statistics and probability for engineers", Wiley, 2002 god.

22. Web sources:

(max. 687 characters)

23. Applicable starting from the academic year:

2015/16

24. Adopted in the Faculty/Academy session:

01.06.2015