SYLLABUS

1. Course title:

STATISTICS IN MECHANICAL ENGINEERING

2. Code:

3. Cycle of study:

I

4. ECTS credits:

3

5. Type of course:

Elective

6. Prerequisites:

None

7. Class restrictions:

None

8. Duration / semester(s):

1   4

9. Weekly contact hours and student workload:

	Semester (1)	4	Semester (2)		(for two-semester courses)	Workload: (hours)	
9.1. Lectures		3			Classes:	33,75
9.2. Seminars		0			Individual work:	55.58
9.3. Laboratory / Practice classes		0			In total:	89.33

10. Faculty:

FACULTY OF MECHANICAL ENGINEERING TUZLA

11. Department/study program:

PRODUCTION ENGINEERING,MECHATRONIC,ENERGETIC

12. Lecturer:

prof. Emir Šarić, PhD

13. Course aims:

It is to understand:
  - Graphical and Numerical Summaries of Data,

- **Relationship between two Variables,**
- **Concept of statistical inference,**
- **Laws of probability,**
- **Regression and ANOVA analysis,**
- **Concept of Statistical analysis of Processes,**
- **Basic tools for quality control of processes**

14. Learning outcomes:

On successful completion of this module students will gain knowledge and skills an will be able to:
-statistically describe measurement results - mean value and error
- explore the relationship between variables
- do statistical inference analysis
- do simple comparative experiments and answer how often would these methods give the correct answer
- analyze and interpret the results of Regression and ANOVA
- design and analyze control charts of a process
- apply basic tools for quality control of processes

15. Course content:

1. Introduction, Learning Objectives and Statistical Methods Overview,
2. Statistical analysis of experimental data, Measures of the Center, Measures of Spread,
3. Displaying data set with Graphs, Types of Graphs (Bar Graph, Pie Charts, Histogram, Time plot..)
4. Probability Distributions, Important Discrete and Continuous Distributions
5. Normal Distribution, Probability Plots
6. Relationships Between Variables, Scatter Plot, Covariance and Correlation,
7. Least-Squares Regression, Simple Linear Regression,
8. Midterm Course Overview and Exam
9. Simple Non-linear Regression, Regression Diagnostics,
10. Statistics and Sampling Distributions,
11. Statistical Inference for a Single Sample,
12. Statistical Inference for Two Samples,
13. Basics of Statistical Process Control (X-chart, R-chart, S-chart),
14. One Factor ANOVA
15. Course Overview and Second Exam

16. Learning methods:

The learning activities will be realized through a combination of lectorials, discussion groups, practical case studies by use of appropriate techniques and consultations. Independent learning includes hours engaged with essential reading andassignment preparation.

17. Assessment methods:

Assessment includes:
- assesment of individual and group activities,
- assess of semestral work,
- final assessment written and/or oral exam

Grade	Descriptive	Letter	For the number of points achieved
5 (five)	"does not meet the minimum criteria"	"F,FX"	<54 points
6 (six)	"meets the minimum criteria"	"E"	54-64 points
7 (seven)	"generally good, but with significant shortcomings"	"D"	65-74 points
8 (eight)	"average, with noticeable errors"	"C"	75-84 points
9 (nine)	"above average, with some errors"	"B"	85-94 points
10 (ten)	"exceptional success with no errors or with minor errors"	"A"	95-100 points

18. Assessment components:

Individual and group activities 20 bod.
Semestral work 30 bod.
Final exam 50 bod.
Total 100 bod.

19. Mandatory reading list:

1. Suljagić S.: "Vjerovatnost i statistika", Zagreb, 2002 god.
2. Šarić E,: "Statistika u Mašinstvu", Autorizovana predavanja

20. Additional reading list:

1. Montgomery D.: "Applied statistics and probability for engineers", Wiley, 2002 god.
2.D. K. Jain & R. Malhotra: "Industrial Statistics":Dairy Economics, Statistics and Management Division NDRI, Karnal

21. Web sources:

22. Applicable from the academic year:

2025/26

23. Adopted in the Faculty/Academy session: