SYLLABUS

1. Course title:

MEASSUREMENT AND CONTROL

2. Code:

3. Cycle of study:

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4. ECTS credits:

3

5. Type of course:

Elective

6. Prerequisites:

None

7. Class restrictions:

None

8. Duration / semester(s):

1 | 7

9. Weekly contact hours and student workload:

Semester (1)	7	Semester (2)		(for two-semester courses)	Workload: (hours)
9.1. Lectures	2			Classes:	33.75
9.2. Seminars	0			Individual work:	55.83
9.3. Laboratory / Practice classes	1			In total:	89.58

10. Faculty:

FACULTY OF MECHANICAL ENGINEERING TUZLA

11. Department/study program:

Mechatronics

12. Lecturer:

prof. Emir Šarić, PhD

13. Course aims:

It is to:
- understand international organization of metrology,

- aims and principles of measurements,
- basic metrological characteristic of measuring instruments and systems,
- sources of process and measurements variation and
- be able to apply basic tools for quality control of processes

14. Learning outcomes:

After learning course the students should be able to:
- statistically describe measurement results - mean value and error
- quantify measurement uncertainty
- perform MSA analysis and asses their adequacy
- design and analyze control charts of the process (X-chart, R-chart, S-chart)
- calculate and analyze capability indexes

15. Course content:

1. Introduction, History of Metrology,
2. Aims of Metrology, Units of Measurements, International organization,
3. Statistical analysis of Measurement Results,
4. Measurements error, systematic and random error,
5. Measurement uncertainty, uncertainty combination and evaluation,
6. Measurement system analysis (MSA),
7. Principle of Measurements and Measurement Procedure
8. Eample of Strain Measurement and Midterm Exam
9-10. Mechanical metrology -instrumentation and measurement,
11. Quality control, Basic Tools for Quality Control,
12. Statistical process control (SPC),
13. Control Charts,
14. Process and Measurement System Capability Analysis,
15. Other Statistical Process-Monitoring And Control Techniques, Exam

16. Learning methods:

Lecture and Discussions: voice and Power point lecture notes
Practice: Numerical examples and homework handout problems
Seminar paper - summarized in report
Consultations
Independent learning includes hours engaged with essential reading and assignment preparation.

17. Assessment methods:

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

Grading scale is as follows:

Grade	Description	Letter/Points
5 (five)	Does not meet minimum criteria	F <54
6 (six)	Meets minimum criteria	E 54-64
7 (seven)	Generally good, but with significant shortcomings	D 65-74
8 (eight)	Average, with noticeable errors	C 75-84
9 (nine)	Above average, with some errors	B 85-94
10 (ten)	Exceptional with no or minor errors	A 95-100

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. B.Ačko, Proizvodne Meritve, Fakultet za Strojništvo Maribor, 1999
2. E. Šarić, Proizvodna Mjerenja i Kontrola, Autorizovana Predavanja

20. Additional reading list:

2. K. Yang; B.El Haik, Design for Six Sigma,McGraw Hill
1. A.G.Grujović, Tehnička Merenja I-Osnovi teorije merenja, MF Kragujevac, Kragujevac 1999

21. Web sources:

22. Applicable from the academic year:

2025/26

23. Adopted in the Faculty/Academy session: