SYLLABUS

1. Course title:

Technical diagnostics

2. Code:

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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):

I | V

9. Weekly contact hours and student workload:

Semester (1)	I	Semester (2)		(for two-semester courses)	Workload: (hours)
9.1. Lectures	3			Classes:	33.75
9.2. Seminars	0			Individual work:	56.08
9.3. Laboratory / Practice classes	0			In total:	89.83

10. Faculty:

Faculty of Mechanical Engineering in Tuzla

11. Department/study program:

Manufacturing Engineering / Industrial Engineering and Production Management

12. Lecturer:

Dr. Slađan Lovrić, Associate Professor

13. Course aims:

The primary objective of teaching the course “Technical Diagnostics” is to understand the concept, tasks, and role of technical diagnostics in the implementation of condition based maintenance, all with the aim of reducing downtime (both

frequency and duration) and maintenance costs (total costs), as well as to master the necessary theoretical and practical skills in this field of study.

14. Learning outcomes:

Upon successful completion of the lectures in the course "Technical Diagnostics" and passing the exam, the student will be able to independently master the concept and methods of applying technical diagnostics in the maintenance of technical systems. In addition, students will be equipped to apply subjective and objective methods of technical diagnostics primarily within the framework of preventive maintenance. It is important to emphasize that students will be trained in system monitoring for diagnostics through familiarization with and application of modern SCADA systems.

15. Course content:

Teaching will be carried out in accordance with the content—covering the teaching units according to the weekly schedule planned for the semester:
1. Introductory lectures
2. The concept and importance of technical diagnostics
3. Tasks of technical diagnostics
4. Scientific foundations of technical diagnostics
5. Technical diagnostics systems
6. Forecasting the lifespan of technical system components (anticipation)
7. Automation and organization of technical diagnostics implementation
8. First continuous knowledge assessment
9. Subjective methods of technical diagnostics
10. Objective methods of technical diagnostics
11. Diagnostic monitoring systems
12. Expert systems for technical diagnostics
13. Diagnostics of new technological systems
14. Second continuous knowledge assessment
15. Recapitulation of results and review of material covered during the semester

16. Learning methods:

Theoretical lectures (PR): Utilizing multimedia tools, chalk and board, and various video recordings; Application of proactive learning techniques: Encouraging active student participation in the learning process; Seminar work (PR): Independent description of specific topics and solving problems related to the subject matter; Consultations: Clarification of any uncertainties related to the studied subject matter.

17. Assessment methods:

Attendance at a minimum of 70% of lectures,
- Defense of seminar paper (submitted seminar paper + answering the given questions),
-Two continuous knowledge assessments (from the theoretical part) – the student answers assigned questions within a set time frame, related to the study topics;
- Final, remedial, and additional remedial exam (oral or written exam).

Grading system:
Pre-exam obligations: 55 points + Final exam: 45 points = TOTAL: 100 points

Grade	Description	Letter	Points
5 (five)	Does not meet minimum criteria	F, FX	< 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 occasional errors	B	85 – 94
10 (ten)	Excellent performance with no or negligible errors	A	95 – 100

18. Assessment components:

Grading will be based on the following activities:
1. Attendance at lectures: 10 points
2. Defense of the seminar paper: 15 points
3. Continuous knowledge assessments during the semester: 2 × 15 = 30 points

Total pre-exam obligations: 55 points

4. Final exam (oral or written): 45 points

TOTAL: 100 POINTS

19. Mandatory reading list:

1. Saravanja D., Petković D.: Technical Diagnostics: Methods for Testing Structures and System Conditions," Mostar, 2020.
2. Brdarević S.: Maintenance , Zenica 2013.

20. Additional reading list:

1. Adamović Ž.: Technical Diagnostics, Zavod za udžbenike i nastavna sredstva, Beograd, 1997.

21. Web sources:

https://www.scribd.com/document/414589945/Technical Diagnostics

22. Applicable from the academic year:

2025./2026.

23. Adopted in the Faculty/Academy session:

April 2025