UNIVERSITY OF TUZLA UNIVERZITET U TUZLI

SYLLABUS

1. Course title:

Reverse engineering

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 | VI

9. Weekly contact hours and student workload:

				(for two-semester courses)	Workload: (hours)
Semester (1)	I	Semester (2)			
9.1. Lectures	2			Classes:	33.75
9.2. Seminars	0			Individual work:	55.50
9.3. Laboratory / Practice classes	1			In total:	89.25

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 goal of teaching the course "Reverse Engineering" is to understand the meaning, role, and possibilities of applying reverse engineering systems in the modern approach to product development, as well as to acquire the necessary theoretical and practical skills in the field of study.

14. Learning outcomes:

By the end of the semester/course, successful students who have consistently fulfilled their obligations throughout the entire teaching period will be able to: understand the operating principles of reverse engineering systems; comprehend the role and importance of 3D digitization in the product development process; recognize the potential applications of reverse engineering systems; independently perform 3D digitization of physical objects and process the collected data; carry out 3D digitization for the purposes of CAD inspection; independently conduct CAD inspection; and analyze the results of the completed CAD inspection.

15. Course content:

The teaching will be conducted in accordance with the course content, following the weekly schedule planned for the semester:

1. Introductory lectures – The concept of integrated product development
2. The concept of 3D digitization
3. The concept and development of reverse engineering systems
4. Passive methods of 3D digitization
5. Active methods of 3D digitization
6. Hardware and software components of passive 3D digitization systems
7. Hardware and software components of active 3D digitization systems
8. First continuous knowledge assessment
9. Data recording methods in reverse engineering systems
10. Pre-processing of 3D digitization data
11. The concept of industrial CAD inspection
12. 3D digitization in industry
13. Reverse engineering and rapid prototyping
14. Second continuous knowledge assessment
15. Recap of results and review of material covered during the semester

16. Learning methods:

Theoretical lectures (TL) using multimedia tools, chalk and board, and various video recordings; application of proactive learning techniques; seminar paper TL (independent description of selected topics and problem-solving related to the course material); consultations – clarifying potential uncertainties related to the subject matter; laboratory exercises (LE) (problem-solving with practical examples of 3D digitization, active two-way communication between students and teaching assistants).

17. Assessment methods:

- Attendance of at least 70% of lectures,
- Defense of a seminar paper (TL) – submission of the seminar paper and answering related questions,
- Two continuous knowledge assessments (theoretical part) – the student answers set questions within a given time frame, related to the course content
- Laboratory exercise report – independent student work on solving practical problems under the supervision of a teaching assistant
- Final, remedial, or additional remedial exam (oral or written)

Grading system:
Pre-exam obligations: 60 points + Final exam: 40 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. **Seminar paper defense: 15 points**
3. **Continuous knowledge assessments during the semester: 2 × 10 = 20 points**
4. **Attendance at laboratory exercises: 5 points**
5. **Laboratory exercise report: 10 points**

Total pre-exam obligations: 60 points

6. Final exam (oral or written): 40 points **TOTAL: 100 POINTS**

19. Mandatory reading list:

1. Topcic A., Lovric S., Fajic A., Cerjakovic E.: Rapid Prototyping and Reverse Engineering in the Production of Sand Casting Tools", Tuzla, 2016.

20. Additional reading list:

1. Plancak M.: Rapid Prototyping, Models, and Tools", FTN Publishing, Novi Sad, 2004.

21. Web sources:

https://ftp.idu.ac.id/wp-content/uploads/ebook/tdg

22. Applicable from the academic year:

2025./2026.

23. Adopted in the Faculty/Academy session:

April 2025