UNIVERSITY OF TUZLA UNIVERZITET U TUZLI

SYLLABUS

1. Course title:

COMPUTER AIDED DESIGN

2. Code:

3. Cycle of study:

4. ECTS credits:

5

5. Type of course:

Mandatory

6. Prerequisites:

7. Class restrictions:

8. Duration / semester(s):

1	III

9. Weekly contact hours and student workload:

Semester (1)	1	Semester (2)		(for two-semester courses)	Workload: (hours)
9.1. Lectures	3			Classes:	45.00
9.2. Seminars	0			Individual work:	86.92
9.3. Laboratory / Practice classes	1			In total:	131.92

10. Faculty:

Mechanical Engineering

11. Department/study program:

Energy and ThermoFluidic Engineering, Production Engineering, Mechatronics

12. Lecturer:

Dr.Sc. Salko Ćosić

13. Course aims:

Acquisition of basic theoretical and practical knowledge in the field of engineering design, construction methodology, selection of construction materials, shaping, dimensioning, optimization and simulation of the behavior of individual parts or assemblies and entire technical solutions using modern CAD software tools.

14. Learning outcomes:

Students who have successfully mastered the course content will be able to independently analyze the assigned design/construction task, to carry out conception, material selection, design and dimensioning, as well as optimization and simulation of the behavior of individual parts or products in mechanical engineering, using modern CAD software tools.

15. Course content:

1. Introduction, construction methodology, tasks of the constructor, the role and importance of computers in CAD
2. life cycle, design, engineering, PLM,
3. conceptual design, morphological matrices, selection of the optimal variant, VDI 2225.
4. classical foundations of design, selection of parameters and dimensions, technologicality of shapes, selection of materials
5. standards and tolerances, length, shape and position tolerances
6. construction criteria (evidence), FEM in analysis and proof of criteria
7. types of loads, stress concentration
8. TEST No. 1
9. fatigue, dynamic strength, dynamic strength diagrams,
10. influencing factors and increase in dynamic strength, complex loads, degree of safety
11. stress spectra, fatigue hypotheses (PM)
12. multiaxial fatigue, fatigue analysis software, computational examples...
13. design and reliability, deterministic and probabilistic concepts, index of reliability
14. optimization of dimensions and shapes, topological optimization of design, examples (SW).
15. TEST no.2

16. Learning methods:

Lectures and presentations with analysis of examples, problems for independent practice, laboratory exercises with program tasks, consultations with the teacher and assistant.

17. Assessment methods:

Partial knowledge tests are conducted in the middle and at the end of the semester and include a practical part (program assignments) and a theory test. A student who has achieved at least 54% of points has passed the partial knowledge test. At the final exam, the student is exempted from the part of the exam that was passed through partial tests. In order to enter a grade, it is necessary to pass both the practical and theoretical parts of the exam.

Rating:
5 (five, F,FX) <54, does not meet minimum criteria,
6 (six, E) 54 - 64, meets minimum criteria
7 (seven, D) 65 - 74, generally good, but with significant flaws,
8 (eight, C) 75-84, average, with noticeable flaws
9 (nine, B) 85 - 94, above average, with a few errors,
10 (ten, A) 95 - 100, outstanding achievement without errors or with minor errors

18. Assessment components:

The exam grade is based on the total number of points the student has earned by completing the pre-exam requirements and taking the exam, as follows:

Pre-exam requirements:
Partial Test I, tasks + theory: 15 + 15 = 30
Partial Test2, tasks + theory: 15 + 15 = 30

Total pre-exam requirements: 60
Final exam: 40
Total maximum: 100

19. Mandatory reading list:

1. Ognjanović M. : "Razvoj i dizaj mašina", Mašinski fakulet Beograd 2007 god.
2. Vitas D.: "Osnovi mašinskih konstrukcija I i II dio, Naučna knjiga Beograd 1987.

20. Additional reading list:

1. Kurowski P.: "Engineering Analysis with SW simulation", SDC 2018

21. Web sources:

22. Applicable from the academic year:

2025/2026

23. Adopted in the Faculty/Academy session: