UNIVERSITY OF TUZLA UNIVERZITET U TUZLI

SYLLABUS

1. Course title:

Machine elements II

2. Code:

3. Cycle of study:

I

4. ECTS credits:

6

5. Type of course:

Mandatory

6. Prerequisites:

No

7. Class restrictions:

No

8. Duration / semester(s):

I | IV

9. Weekly contact hours and student workload:

				(for two-semester courses)	Workload: (hours)	
Semester (1)	5	Semester (2)				
9.1. Lectures	3				Classes:	56,25
9.2. Seminars	2				Individual work:	120,1
9.3. Laboratory / Practice classes	0				In total:	176,3

10. Faculty:

Faculty of Mechanical Engineering

11. Department/study program:

Energy and thermo-fluid engineering, Production engineering, Mechatronics

12. Lecturer:

Dr. sc. Džemal Kovačević,Assistant professor

13. Course aims:

Acquiring skills and competences for power transmission design based on purpose, function, conditions of use, design, applied material, transmission components selection and/or production technology, calculations, conditions of lubrication, cooling and maintenance.

14. Learning outcomes:

Based on the knowledge acquired while attending the course, student will be able to determine the basic requirements for mechanical power transmissions, analyze the operating conditions and mechanical loads for power transmission compotents, select the optimal type and variant of the power transmission for the given conditions, calculate and size components, and define the necessary lubrication, cooling and maintenance conditions. The student will be able to design the basic components of the power transmission based on the selected material and manufacturing technology, in accordance with their basic specifications.

15. Course content:

1. Introduction to the problem of designing power transmissions based on purpose, function, conditions of use, design, applied materials, manufacturing technology, etc.
2. Couplings: design variations, calculation of couplings, classification of couplings, rigid couplings, adjustable couplings
3. Couplings: flexible couplings, detachable couplings, clutches.
4. Bearings: classification of bearings, guides, types of bearings, rolling bearings.
5. Rolling bearings: designs, sealing, lubrication, calculation and selection.
6. Sliding bearings: designs, bearing materials, bearing lubrication, hydrodynamic lubrication theory, sealing.
7. First partial test.
8. Mechanical power transmissions: types, designs, basic characteristics (designs advantages and disadvantages).
9. Mechanical power transmissions: transmission ratios and of rotational speed and torque adjustments, planetary transmissions,
10: Mechanical power transmissions: friction transmissions, gear transmissions (types, loads)
11. Geared power transmissions: helical gear transmission, calculation of elements of gear power transmissions, loads on the shafts of gear power transmissions.
12. Belt drives: types and design performance, kinematics, forces and stresses of belts, calculation and selection of belt drives elements.
13. Chain drivs: types and design performance, kinematics, forces and bearing capacity, calculation and selection of chain drives elements.
14. Mechanical transmissions with screw girs, worm power transmissions.
15. Second partial test.

16. Learning methods:

Lectures, auditory exercises, graphic works, consultations, interactive communication with course participants, company tour.

17. Assessment methods:

The concept of knowledge assessment is based on continuous work with students during the semester. Knowledge assessment methods include: knowledge assessment through partial exams during class, creation of graphic works as well as final exam in written and/or oral form. This allows all students who have different affinities one treatment (written and/or oral knowledge test).

18. Assessment components:

Evaluation will be based on the following activities:

Pre-examination requirements
- Written partial test I 20 points.
- Written partial test II 20 points.
- Assignments, project paper / graphic works 15 points.
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Total pre-exam requirements 55 points.
Final exam 45 points.
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Total maximum 100 points.

Grading scale is as follows:

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

19. Mandatory reading list:

1. K.H.Decker: Elementi strojeva, Golden marketing-Tehnička knjiga, Zagreb, 2006.
2. D.J.Vitas, M.D. Trbojević: Mašinski elementi II, Naučna knjiga, Beograd,1979.
3. D.J.Vitas, M.D.Trbojević: Mašinski elementi III, Naučna knjiga, Beograd,1981.

20. Additional reading list:

1. P.Muratović, F.Islamović, B.Šarić: Mašinski elementi III, Grafičar Bihać, Bihać,2010.
2. E.Oberšmit: Ozubljenja i zupčanici, Sveučilište u Zagrebu, Zagreb, 1985.
3. A.Boege: Vieweg Handbuch Maschinenbau, Friedr. Vieweg & Sohn Verlag, Wiesbaden 2007.

21. Web sources:

1. https://archive.org/details/shigley-j.-e.-mechanical-engineering-design-8th-edition/page/n417/mode/2up
2. https://ftp.idu.ac.id/wp-content/uploads/ebook/tdg/DESIGN%20SISTEM%20DAYA%20GERAK/Machine%20Elements%20in%20Mechanical%20Design.pdf

22. Applicable from the academic year:

2025/2026

23. Adopted in the Faculty/Academy session: