SYLLABUS

1. Course title:

Mechanisms and dynamics of machines

2. Code:

3. Cycle of study:

1

4. ECTS credits:

4

5. Type of course:

(●) Mandatory ( ) Elective

6. Prerequisites:

no

7. Class restrictions:

Students of the third year of study at the Faculty of Mechanical Engineering (I cycle of studies)

8. Duration / semester:

1 5

9. Weekly contact hours:

9.1. Lectures: 2

9.2. Seminars: 0

9.3. Laboratory/Practice classes: 1

10. Faculty:

Faculty of Mechanical Engineering

11. Department/study program:

Production machinery

12. Lecturer:

Dr. Sc. Denijal Sprečić, full professor

13. Lecturer's e-mail:

denijal.sprecic@untz.ba

14. Web site:

http://mf.untz.ba/

15. Course aims:

The basic goal of teaching the subject "Mechanisms and dynamics of machines" is to train students to solve engineering problems related to the design of mechanisms and machines, and to master the necessary skills and methods for solving problems in the given field.

16. Learning outcomes:

At the end of the semester, successful students, who have continually performed their duties throughout the teaching process, will be able to solve tasks related to design (analysis and synthesis) mechanisms.

17. Course content:

- Introduction, Objective and Problem of Mechanism Theory
- Basic terms and definitions
- Structural analysis of mechanisms, kinematic joints, mechanism mobility, kinematic chains, mechanism design
- Kinematic analysis of mechanisms, analytical and graphical determination of speed and acceleration of point mechanisms, current velocity poles
- The method of w - kofunction
- Determination of the speed of the mechanism based on the reduced mechanism I degree
- Determination of acceleration of mechanism based on reduced mechanism II degree
- Dynamic analysis of mechanisms, determination of inertial forces, kinetostatic analysis of mechanisms
- Determination of kinematic pairs reaction, drive member dynamics, friction effect on motion mechanisms
- Reduction of force and moments of the mechanism, reduction of mass and moments of the inertia of the mechanism
- Equivalent mass, determination of torque inertia
- Determining the required degree of uneven motion of the mechanism
- Balancing Mechanisms
- Gear mechanisms
- Camshaft mechanisms

18. Learning methods:

- Lectures (dealing with teaching units that are defined by the content of the course),
- Laboratory exercises (held in accordance with the intended curriculum and monitoring the works within teaching units),
- Colloquy (continuous knowledge examination),
- Graphic works,
- Consultation

19. Assessment methods:

The methods of knowledge checking are: graphic works, colloquia, final exam.

- Regular attendance and teaching activities (lectures and exercises) carry a maximum of 10 points,
- Graphic works contain tasks that the student needs to solve and submit to the end of the semester. The total number of points a student can win for a given graphic work is a maximum of 15 points.
- Columns represent the form of continuous checks that are defined during the semester and within which students Solving tasks from certain areas. The sum of the points from each colloquium that a student can win is a maximum of 30 points.
- Final exams are submitted in writing after the pre-fulfilled conditions regarding regular attendance and teaching activity and dedicated graphic works. At the final exam, the student can win a maximum of 45 points.

Rating system: (10) + (15) + (30) + (45) = (100) points

Rating	Descriptive	Slow	For a score of points
5 (five)	"Fails"	"F"	0-53 points
6 (six)	"sufficient"	"E"	54-63 points
7 (seven)	"good"	"D"	64-73 points
8 (eight)	"superb"	"C"	74-83 points
9 (nine)	"outstanding"	"B"	84-93 points
10 (ten)	"excellent"	"A"	94-100 points

In order for a student to receive a signature and access the final exam, it is necessary to fulfill the following conditions:
- attend to 80% of lectures and exercises,
- to submit graphic works,
- to fulfill all the other conditions that the subject teacher places during the semester.

Summarized points are collected from all student activities during the semester to the final exam. If the student has obtained the required score for the pass grade, the grade can be entered in the index. If the student has not achieved the required number of points, additional points can be obtained on the final exam (tasks).

20. Assessment components:

The assessment of the exam is based on the total number of points the student has obtained by fulfilling the pre-requisites and passing the exam according to the quality of the acquired knowledge and skills, and it contains a maximum of 100 points and is determined according to the following scale:
• attendance and activity on lectures (lectures and exercises) - maximum 5 points,
• graphic works - maximum 10 points,
• colloquiums - maximum 15 points,
• final exam (theory) - maximum 25 points
• final exam (tasks) - maximum 45 points

21. Required reading list:

1. Robert L..N.: An Intraduction to the Syntesis and Analysis of mechsnisms and Machines, New Jersey, 1999.
2. Sekulić A.: Projektovanje mehanizama, Beograd, 1998.
3. Shigley J. E., Uicker J. J.: Theory of Machines and Mechanisms, McGraw-Hill 1995

22. Web sources:

23. Applicable starting from the academic year:

2015/2016

24. Adopted in the Faculty/Academy session:

01.06.2015