

SYLLABUS

1. Course title:

DYNAMICS AND VIBRATIONS

2. Code:

(max. 20 characters)

3. Cycle of study:

1

4. ECTS credits:

6

5. Type of course: Mandatory Elective**6. Prerequisites:**

Attend courses in dynamics and vibration, attend exercises

7. Class restrictions:

-

8. Duration / semester:

1

3

9. Weekly contact hours:

9.1. Lectures:

3

9.2. Seminars:

2

9.3. Laboratory/Practice classes:

0

10. Faculty:

Faculty of Mechanical Engineering

11. Department/study program:

Power Engineering, Production Engineering, Mechatronics

12. Lecturer:

dr.sc. Seniha Karić, docent

13. Lecturer's e-mail:

seniha.karic@untz.ba

14. Web site:

www.mf.untz.ba

15. Course aims:

The aim of the course is to transfere students knowledge and skills in the field of dynamics and vibrations. Training for independent problem solving in the field of dynamics and vibrations.

16. Learning outcomes:

Based on the knowledge acquired during the attending of cases, students will be able to solve the tasks of dynamics and vibrations. Also assess what kind of movement body or particle is performing and which dynamic laws apply, and to perform analysis of such movement. Acquired skills are necessary for solving individual tasks of dynamics and vibrations, and as basic knowledge for the study of other subjects in the field of dynamics: Theory of mechanisms, Dynamics of machines etc.

17. Course content:

- Particle dynamics
- Particle systems and rigid bodies dynamics
- Tsiolkovsky - variable mass bodies formula
- The angular momentum of the material systems
- The kinetic energy of the material system
- D'Alamber`s principle
- Dynamics of rigid body rotating about a fixed axis
- Approximate theory of gyroscopic phenomena
- Collision theory
- Flight dynamics in the solar system
- Elements of analytical mechanics
- Small, linear particle oscillations
- Small oscillations of a system with one degree of freedom
- Small oscillations of material systems with two degrees of freedom
- Small oscillations of material systems with a finite number of degrees of freedom
- Critical speed high-speed shaft

18. Learning methods:

- Lectures, using multimedia resources, techniques of active learning and with the active participation of students;
- Auditory exercises;
- Home work

19. Assessment methods:

After half of the semester, students take the writing test (the first mid-term), which includes previously treated topics from lectures and exercises. The test consists of tasks and theoretical issues to be evaluated individually. Test tasks consists of two multiple-choice task. A student on the first midterm of tasks can achieve a maximum of 15 points (50% or 7.5 point of which represents a passing grade), and to test the theory can achieve 7.5 points (40% or 3 points which represents a passing grade). After the end of the semester students take the writing test (second mid-term) covering the treated topics with lectures and exercises in the second part of the semester. The test consists of tasks and theoretical issues to be evaluated individually. Test tasks consist of multiple-choice tasks. Student on the second midterm of tasks can achieve a maximum of 15 points (50% or 7.5 points of which represents a passing grade), and to test the theory can achieve 7.5 points (40% or 3 points of which represents a passing grade). Both tests taken by all students in the course at the same time thereby achieving uniformity of the level of knowledge that is being tested, as well as the conditions under which the student takes the exam. By attending lectures and exercises and ongoing activity throughout the semester, the student can earn 0 to 5 points.

The final exam consists of two parts: written and oral. All students can take final exam. The written part of the exam consists of tasks that include all treated topics, where students can achieve max. 30 points, where at least 15 points are required to be taken in account.

At the oral examination the student answers questions from the all topics treated in lectures and exercises. Oral exam can be passed if a student answers to most questions. If the student does not pass the oral exam, students points achieved on written part of the final exam are deleted. The maximum number of points a student can achieve at the oral exam is 20. In order for students to take the oral exam, student must previously have achieved at least 34 points. If the student does not have the minimum for taking the oral exam, achieved credits within written exam gets cumulatively added to students score on the makeup exam. On makeup exam student is required to pass a written and oral exam to. The makeup exam is taken same as final. To the student passed the exam must achieve a minimum of 54 points

20. Assessment components:

Students mark is based on the total number of points a student earned by completing pre-exam requirements and exams, according to the quality of the acquired knowledge and skills, and contains a maximum of 100 points, and is determined according to the following scale:

Student obligation	credits
The presence of lectures, exercises and activity	5
2 pre-exam test on computational tasks	2x15
2 pre-exam test on theory	2x7,5
(pre-exam requirements, total)	(50)
Final exam: - written (tasks + theory)	30
- oral	20

21. Required reading list:

1. Doleček V. (2007) Dinamika. Mašinski fakultet Sarajevo. Sarajevo.
2. Vukojević D. (2004) Teorija oscilacija. Mašinski fakultet Zenica. Zenica.
3. Baričak V. (2007) Zbirka zadataka iz dinamike, Univerzitet u Tuzli. Tuzla.

22. Web sources:**23. Applicable starting from the academic year:**

2015/16

24. Adopted in the Faculty/Academy session:

01.06.2015