

SYLLABUS

1. Course title:

THE SCIENCE OF STRENGTH I

2. Code:

(max. 20 characters)

3. Cycle of study:

1

4. ECTS credits:

5

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

Attend courses in Statics, attend exercises, deliver graphic work

7. Class restrictions:**8. Duration / semester:**

1

3

9. Weekly contact hours:

9.1. Lectures:

2

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 give students knowledge and skills in the field of strength. Training for autonomous graphical and analytical tasks solving in the field of strength.

16. Learning outcomes:

Based on the knowledge acquired during attending of cases, students will be able to solve tasks in the field of statics, using analytical and graphical methods, and draw stress diagrams and deformations. Also assess whether the problems are statically defined or vague and what types of stresses the carriers are exposed and resolve analyzed problems. The acquired skills are necessary for solving individual of strength tasks, and as a basic knowledge for the study of other subjects in the field of mechanics of the deformable bodies: The Science of strength II and others.

17. Course content:

- Methods for solving the task
- Calculated model
- Stress and deformation analysis
- Voltage- Tension
- Voltage and deformation measurement (tensometry)
- Deformations
- Axial load
- Hooke's law
- Hooke's Law on Three-State Tension
- Shearing
- Torsion
- Geometric characteristics of the carrier
- Straight clear bending
- Straight bending forces
- Bending
- Excentric stresses

18. Learning methods:

- Lectures using multimedia resources, techniques of active learning and with the active participation of students;
- Auditory exercises;
- Preparation and delivering of Seminar-graphic works

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. Test consists of two multiple-choice task. A student on the first midterm can achieve a maximum of 15 points (50% of which represents a passing grade). After the end of the semester students take a second writing test (second mid-term) covering the treated topics with lectures and exercises in the second part of the semester. Test tasks consist of multiple-choice tasks. Student on the second mid-term of can achieve a maximum of 15 points (50% of which represents a passing grade). Both tests are 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. As part of the pre-exam requirements students are required to do individual seminar-graphic work, which will include four tasks in various fields. Seminar-graphic works shall be written submitted to professors assistant for review and then presented orally, which will be a base for grading, where student can earn 5-15 points. 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. Only students who submitted and successfully presented seminars 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 maximum 100 points, and is determined according to the following scale:

Student obligation	points
The presence on lectures, exercises and activity	5
Seminars-graphic works	15
2 pre-exam test	2x15
(pre-exam requirements, total)	(50)
Final exam: - written (tasks + theory)	30
- oral	20

21. Required reading list:

1. Kudumović DŽ. (2009) Nauka o čvrstoći I. Mašinski fakultet Tuzla. Tuzla.
2. Doleček V. (2003) Elastostatika. Univerzitet Bihać. Bihać.
2. Brnić J. (1991) Nauka o čvrstoći. Školska knjiga Zagreb. Zagreb.

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

2015/16

24. Adopted in the Faculty/Academy session:

01.06.2015