

## SYLLABUS

**1. Course title:**

Protection in the application of electricity

**2. Code:****3. Cycle of study:****4. ECTS credits:****5. Type of course:** Mandatory  Elective**6. Prerequisites:**

No prerequisites

**7. Class restrictions:**

No class restrictions

**8. Duration / semester:****9. Weekly contact hours:**

9.1. Lectures:

9.2. Seminars:

9.3. Laboratory/Practice classes:

**10. Faculty:**

Faculty of Technology

**11. Department/study program:**

Environmental protection engineering / Occupational safety

**12. Lecturer:****13. Lecturer's e-mail:**

**14. Web site:**

www.tf.untz.ba

**15. Course aims:**

Introducing students with basic electrical engineering and safety measures in the application of electricity to work machines and in working and auxiliary facilities.

Introduction to the action of electricity on man and the kinds of electricity hazards.

Introduction to technical measures in the performance of high and low voltage installations and lines, as well as training in the application of rules and measures for safe operation at plants and lines.

**16. Learning outcomes:**

Explain the types, ie sources of dangers of electricity to humans.

Master the methods for testing protection from indirect contact, by automatic power off.

Master the measurements of loop resistance and protection efficiency check.

Master the measurements of electrical quantities, which are carried out in an unloaded condition (measurement of insulation resistance, lightning rod installation).

Master the process of dimensioning of technical protection measures from direct and indirect touch.

Describe and set up rules and safety measures for work at the plants, power lines and installations.

**17. Course content:**

Significance of safety in the application of electricity. Basic concepts and laws on electrical engineering (electrical charge, AC and DC electrostatics). Impact and types of electric current on man. Technical safety in the performance of high and low voltage plants. Technical measures of protection against direct and indirect contact. Technical safety in the performance of overhead and underground lines. Safety regulations and safety measures for works on power plants. Electrical installations in specific areas (wet areas, work sites, machines). Work on power plants under voltage. Technical and personal protective equipment and tools and equipment for safe operation at power plants. Regulations (legal and internal) and the organization of occupational safety. First aid and release of injured from the circuit.

**18. Learning methods:**

The following activities of successful learning are planned: concrete experience and reflection. Learning styles are preferred: visual style, auditory, logical-mathematical and stand-alone. The most important learning methods in the subject are:

- Lectures with the use of multimedia resources, active learning techniques and with active participation and discussion of students;
- Experimental exercises

**19. Assessment methods:**

Throughout the course, students are required to regularly attend lectures and exercises. Students' attendance records will be regularly kept. On a special form, the subject teacher will continuously monitor the presence of each student. During the semester, the student can be absent with a maximum of three lectures and three exercises, being obliged to bring proof of justification of absence (medical certificate, etc.). In the case of more unexcused absences, the student loses the right to the signature of the teacher.

- TESTS - Two tests throughout the semester, for the oral part of the exam. Each test for the oral part of the exam, consists of 20 short theoretical questions related to the previously processed material and carries 15 points (for a passing grade, one should achieve a minimum of 8 points). Tests are usually conducted after every six weeks of lectures, whereby the subject teacher will announce them to the students at least two weeks before each test.
- LABORATORY EXERCISES: the student is obliged to do all laboratory exercises, and based on activity in exercises can achieve a maximum of 25 points (for a passing grade should achieve a minimum of 12 points).
- FINAL PART OF THE EXAM - Students who have collected the required number of points by all criteria (54 points), have the option of additional (verbally or in writing exam) for a higher final grade. The maximum number of points that can be obtained on the final exam is 30. The minimum number of points, which must be reached on the final exam is 18.

All the students who did not meet the conditions in one of the tests or who are not satisfied with the grade, but who have completed all other obligations of the course (have the signature of the subject teacher in the index) take the final exam. The student can not get a final grade if he has not passed all the tests.

- SEMINAR WORK OF STUDENTS: student has the opportunity to do one seminar work. Successfully prepared and verbally performed seminar work is evaluated with a maximum of 10 points (minimum 6 points), which are added to the total number of points achieved on other bases, in the formation of the final grade.

**20. Assessment components:**

The final grade is based on the total number of points obtained through prerequisites and the final exam, according to the quality of the acquired knowledge and skills. It has a maximum of 100 points, according to the following scale:

Regularity of teaching attendance (lectures + exercises): 5 points

Activity in laboratory exercises: 25 points

Tests (theory): 30 points

Seminar paper: 10 points

Final exam: 30 points

**21. Required reading list:**

Mileusnić, E.: Ispitivanje električnih instalacija niskog napona, Zagreb: ZIRS, 1996.

Brechmann i dr.: Westermannov elektrotehnički priručnik, Zagreb, Tehnička knjiga, 1991.

Essert, M., Walter, Z.: Osnove elektrotehnike, Zagreb: SNL, 1990.

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

2015/2016

**24. Adopted in the Faculty/Academy session:**