SYLLABUS

1. Course title:

ELECTROMAGNETIC RADIATION AND PROTECTION

2. Code:

3. Cycle of study:

1

4. ECTS credits:

3

5. Type of course:

○ Mandatory ◉ Elective

6. Prerequisites:

7. Class restrictions:

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 Technology

11. Department/study program:

Environmental Protection Engineering

12. Lecturer:

13. Lecturer's e-mail:

14. Web site:

www.tf.untz.ba

15. Course aims:

Acquisition of knowledge from the theory of macroscopic electromagnetic fields, sources of electromagnetic radiation, methods of calculation, measurements and protection against electromagnetic radiation.

16. Learning outcomes:

Students will acquire basic theoretical knowledge of electromagnetic fields and electromagnetic radiation as well as the skills to assess their impact on man and the environment.

17. Course content:

Electrostatic field. Quasistional current field. Magnetostatic field. Magnetic field of constant current. Electromagnetic induction. Macroscopic electromagnetic field. Guided electromagnetic waves. The general term of antenna and radiation of electromagnetic energy. Application and protection from non-ionizing radiation: static fields of industrial frequency, radio and TV frequencies, satellite and mobile communications, radar frequencies of electrotherms, laser technology basics; standards, norms and methods of protection. The basics of quantum radiation: impulse and energy operator; Bor model of the atom, Schroedinger's equation; Potential pit; tunnel-effect; Secondary quantum. Infrared-Thermal Radiation: the basics of quantum radiation Kirchoff's law, Stefan-Boltzman's law, Vine's law, Plank's law; Absolutely black body and gray bodies; Radiation sources; Influence on man; Applications and methods of protection. Ultraviolet radiation: sources of radiation; Influence on man and application; Ultraviolet radiation: sources of radiation.

18. Learning methods:

Teaching methods are based on multimedia lectures and laboratory exercises. In the lectures, the frames of the problem are given, and the facts and theoretically approaches to the problem are analyzed, and on exercises, classes are conducted in an interactive form and through practical work within the lab exercises. Teaching methods imply active participation of students, work in the lab and visits to manufacturing and service organizations.

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 verbaly 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:

Petković DM i sar, (2009). Elektromagnetni talasi i zračenje. Niš, Fakultet zaštite na radu.
Veličković D (1998). Elektromagnetna zračenja, 1. 2. i 3. Niš, Fakultet zaštite na radu.

22. Web sources:

23. Applicable starting from the academic year:

2015/2016

24. Adopted in the Faculty/Academy session: