

SYLLABUS

1. Course title:

TRANSFORMATION OF POLLUTANTS IN THE ENVIRONMENT

2. Code:**3. Cycle of study:**

1

4. ECTS credits:

6

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

No prerequisites

7. Class restrictions:

No 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 Technology

11. Department/study program:

Environmental protection engineering, Occupational safety

12. Lecturer:

Vahida Selimbašić, full professor

13. Lecturer's e-mail:

vahida.selimbasic@untz.ba

14. Web site:

www.tf.untz.ba

15. Course aims:

Basic knowledge of the atmosphere, structure, chemical cycles and pollutants, as well as devices for preventing the emission of harmful substances into the environment is gained.

16. Learning outcomes:

After passing the exam, the student is expected to know:

- definition of basic concepts and history of the chemistry of the atmosphere
- classification of pollutants and their origin in the atmosphere
- evaluation and projection of air quality
- thermodynamics, and kinetics of formation of oxides in the atmosphere
- the role of various harmful substances in photochemical processes in the atmosphere
- techniques and procedures for sampling harmful substances in the atmosphere

17. Course content:

Basic characteristics, structure and composition of the atmosphere. Atmosphere as a photochemical system. Absorption coefficient of atmospheric gases. Temperature inversions. Contaminants of the atmosphere, and their origin. Air quality assessment. Emission and immission standards. Kinetics of carbon monoxide formation and control of its emission. Thermodynamics and kinetics of formation of sulfur oxides and methods of control. Thermodynamics of the formation of NO and NO₂ (NO_x). Sources of NO_x emissions. Kinetics of formation of NO in the process of combustion. Methods of control. Assessment of the mass of carbon, sulfur and nitrogen compounds in the atmosphere; Emission sources, conversion, life time of a particular compound. Analysis of the increase in acidity of rainfall. Creation of monoatomic oxygen and ozone. Photochemical reactions of atmospheric pollution. The role of various primary harmful substances in photochemical processes in the atmosphere. Life time of harmful substances in the lower layers of the atmosphere - Deposition Mechanisms. Techniques and procedures for sampling harmful substances in the atmosphere.

18. Learning methods:

lectures (through interactive lectures to introduce students with structure, chemical cycles and air pollution, and devices for the prevention of emissions of pollutants into the environment)
auditorial exercises (group solving of given problems)
seminar (group solving of given problems)
consultations- through consultations, students can deepen the knowledge acquired at lectures.

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, and two tests for the written part of the exam, ie a total of 4 tests. Each test for the oral part of the exam consists of 20 short theoretical questions related to the previously processed lectures and carries 15 points (for a passing grade, one should achieve a minimum of 8 points). Each test for the written part of the exam consists of four assignments related to the previously processed lectures 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.

- 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 5 points (minimum 3 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 contains a maximum of 100 points, according to the following scale:

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

Tests (theory): 30 points

Tests (assignments): 30 points

Seminar paper: 5 points

Final exam: 30 points

21. Required reading list:

Selimbašić V, Cipurković A, Crnkić A (2014). Hemija i zaštita okoline. OFF-SET, Tuzla.

Baird C (1999). Environmental Chemistry. Freeman W. H. and Company, New York.

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

2015/2016

24. Adopted in the Faculty/Academy session: