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:

To introduce students with the properties of mineral and organic soil matter and their role in chemical processes in the soil. To determine the concentration and composition of the soil solution, the importance and role of soil reaction, acidity, alkalinity and salinity for certain soil properties, and processes in the soil. To analyze soil contamination with organic and inorganic compounds.

16. Learning outcomes:

- to identify the chemical composition and origin of the chemical constituents in the lithosphere, compare the natural and anthropogenic conditioned processes of transformation of mineral and organic matter of the soil, to establish similarities and differences in chemical processes in different soils, sources of soil pollution as a result of human activity
- to know and explain the hydrological cycle, the interactions that occur between the different phases, to explain the balance of carbonates, to adopt the concepts of alkalinity and acidity, to predict the buffer capacity of water, and to understand

17. Course content:

SOIL: Introduction. Definition of basic concepts of soil. MaIN substrates and pedogenesis processes. Mineral and organic soil structure. Liquid phase of the soil. Precipitation and dissolution processes. Cation and anion exchange reactions at the boundary of the soil-solution phase. Soil acidity, measurement methods, origin and soil acidity correction. Alkalinity, salinity, buffers in the soil. Soil contamination with organic and inorganic compounds. The redox potential of the soil and the practical application. The properties of colloids in the environment. Problems of soil contamination.
WATER: Properties and structure of water molecule. Composition of water (gases, compounds and ions in water, organic matter, microelements, radioactive elements). Interactions in the gas-water system. Carbonate system. Alkalinity and acidity. Metal ions in aqueous solutions. Humic substances. Water hardness. Settling and dissolving. Redox reactions in water. Water pollution with organic and inorganic compounds. Water pollution problems.

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 verbaly 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.
Sparks D.L. (2003. Environmental Soil Chemistry. 2nd edition Academic Press, London.

22. Web sources:

23. Applicable starting from the academic year:

2015/2016

24. Adopted in the Faculty/Academy session: