SYLLABUS

1. Course title:

RECYCLING AND DISPOSAL OF WASTE

2. Code:

3. Cycle of study:

1

4. ECTS credits:

5

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

No prerequisites

7. Class restrictions:

8. Duration / semester:

1 8

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:

Chemical Engineering and Technologies / Chemistry and Engineering of Materials

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:

Introduction to the types, properties, quantities and composition of waste. Implementation of integrated waste management system (legislation, strategies and plans for waste management in BiH). Treatment options (thermal and material use, composting) and solid waste disposal. Introduction to the impacts and forms of polymer pollution - prevention of environmental pollution - treatment of polymer waste in industry and households.

16. Learning outcomes:

1. Acquisition of basic knowledge related to: waste generation, life cycle analysis, pollution measurements and solid waste characterization.
2. Acquiring knowledge about the solid waste management and recycling system and the energy utilization generated by incineration and waste disposal.
3. Gaining abilities and understanding of waste recovery technologies, the emergence of secondary materials, and methods for estimating the composition of solid waste.
4. the ability of either independent or team work in the laboratory and presentation of the work in written and oral form.

17. Course content:

Introduction. Pollution of the environment. Green engineering and sustainable development. Life cycle assessment, LCA, LCC. Measurement units of pollution. Definition of waste, characterization and morphological composition of solid waste and waste characteristics. Solid waste management system (storage, separation, transportation). Disposal of materials from waste, recycling of metals, plastics, glass, paper, building materials, e-waste. Disposal and recycling of hazardous waste. Composting. Incineration of unseparated and hazardous waste. Landfills of municipal waste. Location selection, solid waste disposal, landfill gas, leachate, landfill design, landfill management, the concept of organized solid waste management.

18. Learning methods:

lectures (through interactive lectures to introduce students with With sources and types of waste pollution, with the characterization and disposal of waste and the concept of organized disposal).
laboratory exercises (group solving of given problems, visits to waste disposal and recycling facilities)
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. 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:

Selimbašić V, Cipurković A, Crnkić A (2014). Hemija i zaštita okoline. OFF-SET, Tuzla.
Đarmati Š, (2008). Menadžment otpada. FUTURA, Beograd.

22. Web sources:

23. Applicable starting from the academic year:

2015/2016

24. Adopted in the Faculty/Academy session: