SYLLABUS

1. Course title:

WATER TECHNOLOGY

2. Code:

3. Cycle of study:

1

4. ECTS credits:

4

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

Knowledge gained from the natural sciences.

7. Class restrictions:

Students Department of Food Technology

8. Duration / semester:

1 3

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:

Food Technology

12. Lecturer:

Ramzija Cvrk, Associate Professor, PhD.

13. Lecturer's e-mail:

ramzija.cvrk@untz.ba

14. Web site:

www.tf.untz.ba

15. Course aims:

- Introduction to the characteristics of water in nature, drinking water and water for industry.
- Introduction to the technological processes for the treatment of drinking water and the use in the food industry.
- Obtaining knowledge required for technological sizing, application and comparison of different methods of processing drinking water and water for use in various technological processes of the food industry (disinfection, filtration, flocculation, ion - exchange, membrane filtration, etc.).
- Obtaining knowledge related to the safety of drinking water, and the impact of water on human health.

16. Learning outcomes:

- Knowledge about water resources in nature, the characteristics of the water , clasification of water in nature, drinking water and water for the food industry.
- The ability to select the appropriate technology for water treatment based on the characteristics of water and the required quality of treated water.
- The ability to select the appropriate equipment/plant and technological parameters for the treatment of drinking water, mineral water and bottled water.
- Knowledge in the field of quality control of drinking water and monitoring of drinking water in water supply systems and food industry.

17. Course content:

The resources of water in nature. The management of water resources. Types and characteristics of natural waters. Pre-treatment of surface water. The structure and properties of water (physical, chemical). Basic indicators of water quality. Technological methods for drinking water treatment: coagulation and flocculation, sedimentation, flotation, filtration, softening, deaeration, deodorization, disinfection of drinking water. Removal of specific substances from drinking water: manganese, iron, nitrogen compounds, organic matter etc.. Membrane processes for treatment of drinking water (microfiltration, ultrafiltration, nanofiltration, reverse osmosis, electrodialysis). Bottling natural spring mineral water. Plants for water treatment, equipment selection and design parameters for the treatment of drinking water. Legislation in the field of drinking water. Water supply (water sources, reservoirs, distribution systems, water supply and sanitary safety of drinking water). Water treatment in the food industry.

18. Learning methods:

- Interactive lectures using of modern techniques.
- Consultations of students in a group and individually.
- Visits to industrial plants.
- Writing of seminars.

19. Assessment methods:

After the first half of the semester (seventh or eighth week) students take the first test (midterm), which includes previously treated topics (lectures and exercises). The test consists of 20 questions related to the treated topics. Each question is scored with 1 point. In the first test, the student can get min 11 points and max 20 points. After the end of the semester students take the second test which includes previously treated topics (lectures and exercises). The test consists of 20 questions related to the treated topics. Each question is scored with 1 point. On the second test, a student can also get min 11 points and maximum 20 points. Both tests taken by all students at the same time. The final exam is oral. Final exam is open to all students who have completed all the experimental exercises and passed the final colloquium after the exercise, and passed both a written test (midterm exam). The final oral exam student can get min 26 points, max 50 points. Students who have not passed the written tests, will have the possibility to take the written tests at the time of the final exam, provided they finished preexamination obligations (completed the experimental exercises and passed the final test, and regularly attending classes/lectures). For total success achieved at the exam a student can get min 54 points and max 100 points.

20. Assessment components:

Students obligations:	Points:
Attendance and activity in class:	min 3 - max 5
Laboratory exercises and a final colloquium:	min 3 - max 5
Written test I (first test):	min 11- max 20
Written test II (second test):	min 11- max 20
Final test (written / oral):	min 26 - max 50

Note: For each of these obligations the student must have a min 54% of the maximum specified points.

21. Required reading list:

1. Cvrk R., Begić S.(2015): Tehnologija vode za piće, Printcom Tuzla -Udžbenik univerziteta u Tuzli.
2. Stanojević M. (2009): Tretman pijaće vode, Građevinska knjiga d.o.o., Beograd.
3. Dalmacija B. (2001): Kontrola kvaliteta voda, Prirodno-matematički fakultet, Univerzitet u Novom Sadu.

22. Web sources:

23. Applicable starting from the academic year:

2015/2016

24. Adopted in the Faculty/Academy session:

(max. 10 char.)