

## SYLLABUS

**1. Course title:**

Technological operations

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

1

**4. ECTS credits:**

6

**5. Type of course:** Mandatory  Elective**6. Prerequisites:****7. Class restrictions:**

No class restrictions

**8. Duration / semester:**

1

6

**9. Weekly contact hours:**

9.1. Lectures:

3

9.2. Seminars:

1

9.3. Laboratory/Practice classes:

2

**10. Faculty:**

Faculty of Technology

**11. Department/study program:**

Chemical Engineering and Technologies, Environmental Protection Engineering

**12. Lecturer:**

Elvis Ahmetović, full professor

**13. Lecturer's e-mail:**

elvis.ahmetovic@untz.ba

**14. Web site:**

www.tf.untz.ba

**15. Course aims:**

The aims of the course are:

- to gain basic knowledge about technological operations and to understand their application in the process industry,
- to understand, critically analyze and solve problems of varying complexity,
- to perform specific laboratory experiments, analyze and present results,
- to improve written and verbal communication skills

**16. Learning outcomes:**

After completing the course and the completed teaching obligations students will be able to:

- to use and analyze the available literature in order to obtain the necessary information,
- define basic concepts, understand the basics of technological operations and explain their importance in the process,
- sketch the technological apparatus in which the technological operations are performed and explain the principle of their work
- calculate problems of different complexity and do experiments,
- assess the obtained results of the calculation and draw conclusions
- present the results in written and verbal form.

**17. Course content:**

Presentation of course syllabus. Introduction to technological (unit) operations. Systematization and principles of technological operations. Hydromechanical operations and their applications (basics of fluid mechanics, fluid dynamics, basis of heterogeneous fluid system mechanics, sedimentation, fluid flow through the porous layer, filtration, fluidization, fluid mixing). Thermal operations and their applications (heat transfer by conduction, convection and radiation, heat transfer through a medium, heat exchange between fluids, heat exchangers, evaporation). Diffusion operations and their applications (absorption, extraction, leaching and extraction, distillation, crystallization, adsorption, drying, membrane separation).

**18. Learning methods:**

Lectures, auditorial (calculation) exercises, laboratory (experimental) exercises, seminar work, consultations.

**19. Assessment methods:**

A written and/or oral knowledge check is used to check the knowledge acquired on the course. The written check consists of a knowledge check on the test, during the semester (Test I) and after the end of the semester (Test II), and oral of a short conversation and discussion. The test (I and II) consists of theoretical questions and calculation tasks. During the semester, students are given seminar work that they need to complete and submit no later than the end of the semester. Testing is done verbally through presentation of the seminar paper. Checks on all forms of knowledge are recognized if the achieved result is positive after each individual check and is at least 50% of the total of the anticipated and / or required knowledge and skills. In order to pass the course, the student must have at least 54 cumulative points.

Students who intend to take the exam are required to apply for the exam at the course assistant no later than 2 days before the exam. The application involves submitting a blank notebook of A4 format, in which is necessary to write the name, department, study program, index number and academic year when the course was taken.

**20. Assessment components:**

Students obligations:	Points:
Test I	50 points
Seminar work	10 points
Total preexamination obligations (60 points)	
Test II	
Final/correctional exam (40 points)	40 points

**21. Required reading list:**

1. McCabe, W. L., Smith, J. C. & Harriott, P. (2005). Unit Operations of Chemical Engineering. New York: McGraw-Hill.
2. Ahmetović, E. (2010). Toplinske operacije u procesnom inženjerstvu. Tuzla: Off-Set.

**22. Web sources:**

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**23. Applicable starting from the academic year:**

2015/2016
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**24. Adopted in the Faculty/Academy session:**

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