

SYLLABUS

1. Course title:

OPTIMIZATION OF ENERGY CONSUMPTION IN INDUSTRY

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

1

4. ECTS credits:

3

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

No prerequisites

7. Class restrictions:

No class restrictions

8. Duration / semester:

1

7

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/Food Quality and Safety

12. Lecturer:

Elvis Ahmetović, Associate 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 study are:

The objectives of the subject study are:

- to comprehend the basic knowledge about synthesis and optimization of heat exchange in the process industry,
- to understand, critically analyze and solve problems of heat exchangers network using mathematical programming and present the results,
- to understand the significance of the use of computer-aided tools for the integration of heat
- to improve written and verbal communication skills

16. Learning outcomes:

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

- to use and analyze the available literature in order to obtain the necessary information,
- to understand the basics of rational use / optimization of heat from the aspect of cost-effectiveness and sustainability of the process
- to solve the problems of heat exchangers network synthesis, and draw conclusions
- to design an integrated scheme of heat exchangers network with minimum energy consumption
- to present the results in written and verbal form.

17. Course content:

Presentation of course syllabus. Introduction to the optimization of energy consumption in the process industry. System methods for the integration of energy in the process. The concept of pinch technology (the basics of heat exchange and recuperation in the process, the temperature-enthalpy diagram, the diagram of the component heat and cold flows, the problem table, the large curve diagram, the design of the heat exchangers network). Choice of optimal minimum temperature difference in the heat exchangers network. Design of the heat exchangers network using mathematical programming.

18. Learning methods:

Lectures, auditorial 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. 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 work. Written Testing (Test) consists of a knowledge test on the test after the end of the semester.

The test consists of theoretical questions and tasks. Checks on all forms of knowledge are recognized if the 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 for a student to pass the course, he must achieve a minimum of 54 cumulative points.

Students who intend to access the exam should notify the assistant at least 2 days before the exam. The application implies handing over an empty notebook of A4 format, on which the first and last name, department, study program, index number and academic year when the course is attended should be written.

20. Assessment components:

Students Obligations:	Points:
Seminar paper	60 points
Total preexamination obligations (60 points)	
Test	
Final/corrective exam (40 points)	40 points

21. Required reading list:

1. Kemp, I. C. (2007). Pinch Analysis and Process Integration. A User Guide on Process Integration for the Efficient Use of Energy. Oxford: Butterworth-Heinemann.

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

2015/2016

24. Adopted in the Faculty/Academy session: