SYLLABUS

1. Course title:

FOOD ENGINEERING CALCULATIONS

2. Code:

3. Cycle of study:

1

4. ECTS credits:

7

5. Type of course:

(●) Mandatory ( ) Elective

6. Prerequisites:

Mathematics, Physics, Chemistry

7. Class restrictions:

no restriction

8. Duration / semester:

1 4

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:

Food Technology

12. Lecturer:

Midhat Suljkanović, Full Professor

13. Lecturer's e-mail:

midhat.suljkanovic@untz.ba

14. Web site:

www.tf.untz.ba

15. Course aims:

The aim of the course is to gain the basic skills in mass and energy balances of processes relate to food engineering.

16. Learning outcomes:

After finishing the course, students that have successfully completed their tasks will be able to:
-understand basic parameters related to process streams
-create mathematical model of the process based on its description;
-solve mass and energy balances of basic processes related to food engineering

17. Course content:

1. INTRODUCTION to food engineering. Process parameters. Composition of food systems.
2. Basic mass balance equation. Basic mass balance of simple processes related to food systems (e.g. preparation of solutions, beverages, meet products and various food products), centrifugal separation processes, dilution processes, evaporation and crystallization, distillation, extraction and absorption processes.
3. Moist air and controlled atmosphere. Moist air parameters. Air conditioning and air as a drying medium. Mass balance of drying processes.
4. Energy balance. Heat capacity of food systems. Streams specific enthalpy. Enthalpy change calculation trajectories. Basic energy balance equation; Heating and cooling processes, pasteurization and sterilization processes; Energy balance of evaporation, crystallization, distillation processes. Energy balance of drying and freezing of food products.

18. Learning methods:

-Lectures
-Exercises
-Individual work.
Each lecture session is presented in for of oral session and followed by examples in order to apply theoretical backgrounds. Exercises (working sessions) are focused on solving mass and energy balance problems in compliance with the lecture sessions.

19. Assessment methods:

-Two tests during semester
-Final/makeup exam

Tests during semester are organized as simple balance problems. For each test an available time id 60 minutes. Students are informed on time about exact dates for test dues. Final/makeup exam is composed of five mass and energy balance problems for which the available time is 150 minutes. Test and final/makeup exams are organized and writing sessions. Tests and final/makeup exams are graded based on the difficulty level of the each problem.

20. Assessment components:

Grade is based on the total number of points acquired during semester as well as final/makeup exam and the maximum number of points is 100 as follows:
- Lectures and exercise attendance (10 points), TEST I (20 points), TEST II (20 points).
-Final/makeup exam (50 points). In order to pass the exam student is to acquire minimum of 54 points.

21. Required reading list:

1. Yanniotis, S. 2007. Solving problems in Food Engineering, Springer Science+ Business Media.
2. Suljkanović, M. 2007. Procesno bilnsiranje, IHI.
3. Toledo, R.T. 2012. Fundamentals of Food Process Engineering, Springer, USA.

22. Web sources:

23. Applicable starting from the academic year:

2015/2016

24. Adopted in the Faculty/Academy session: