SYLLABUS

1. Course title:

Design of technological processes

2. Code:

3. Cycle of study:

1

4. ECTS credits:

5

5. Type of course:

(•) Mandatory ( ) Elective

6. Prerequisites:

7. Class restrictions:

No restrictions

8. Duration / semester:

1 7

9. Weekly contact hours:

9.1. Lectures:	3
9.2. Seminars:	0
9.3. Laboratory/Practice classes:	2

10. Faculty:

Faculty of Technology

11. Department/study program:

Chemical Engineering and Technologies

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:

Course aims are to:
- understand basic knowledge about the importance of conceptual design of technological processes in process industry,
- understand the basics of systematic approach and integration of process,
- critically analyze and solve problems of different complexity using computers and different software (e.g. General Algebraic Modelling System (GAMS), Excel, etc.),
- analyze and present the results of the calculation and draw conclusions,
- improve written and verbal communication skills.

16. Learning outcomes:

After completing the course and the teaching obligations students will be able to:
- use and analyze the available literature in order to obtain the necessary information,
- define basic concepts, understand the basics of design of technological processes and explain the importance of process design in industry,
- sketch and explain the generic block flow process diagram in which the final product is produced from the raw materials,
- perform design for problems of different complexity without and with the use of computers
- assess the results of the calculation and draw conclusions,
- present the results in written and verbal forms.

17. Course content:

Presentation of syllabus. Introduction to design of technological processes. Typical problems of process design. The steps in the process design from an idea to the process plant operation. Systematic methods for synthesis and design of processes. The structure and diagrams of technological processes. The research and process development. Estimation of process costs. Types of capital cost estimates. Estimation of purchased equipment costs. Estimation of manufacturing costs. Engineering economic analysis and process profitability. A computer program for capital cost estimation of equipment (CAPCOST). Introduction to process optimization and integration. Fundamentals of process optimization and mathematical programming. Formulation of optimization problems. Computer program General Algebraic Modeling System (GAMS) for process modeling and optimization. Basics of mass and heat integration.

18. Learning methods:

Lectures, laboratory (computer) exercises, seminars, consultations.

19. Assessment methods:

For checking the acquired knowledge in the course, written and/or oral examinations are used. Written examinations consist of knowledge examinations during the semester (Test I) and after the end of the semester (Test II), and an oral examination which consists of a short talk and discussion. Tests (I and II) consist of theoretical questions and calculation problems. During the semester students will be assigned with seminar works that should be completed and submitted by the end of the semester. Assessment is performed through the oral presentation of seminar work. Students should have a positive result after each assessment with at least 50% of the required knowledge. Student must achieve a minimum of 54 cumulative points in order to pass the course.
Students who intend to access the exam should be registered by the teaching assistant at latest two days before the exam. Registration includes A4 notebook on which it is necessary to write the name of the student, department, index number and academic year.

20. Assessment components:

Students obligations:	Weight (%):
Test I	40
Seminar work	20
Test II-Final exam	40

21. Required reading list:

1. Turton, R. et al. (2009). Analysis, Synthesis, and Design of Chemical Processes. New Jersey, USA: Prentice-Hall.
2. Biegler, L. T., Grossmann, I. E., Westerberg, A. W. (1997). Systematic methods of chemical process design. New Jersey: Prentice-Hall.
3. Ahmetović, E. (2016). Odabrana poglavlja hemijsko-procesnog inženjerstva. Tuzla: Univerzitet u Tuzli, Tehnološki fakultet.
4. Ahmetović, E., Ibrić, N. (2011). Projektovanje tehnoloških procesa: interna sktipta. Tuzla: Tehnološki fakultet.

22. Web sources:

23. Applicable starting from the academic year:

2015/2016

24. Adopted in the Faculty/Academy session: