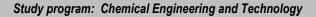


## UNIVERSITY OF EAST SARAJEVO

Faculty of Technology Zvornik



CYCLE I YEAR III



PROCESS EQUIPMENT DESIGN Course title

Department Department for Process Engineering-Faculty of Technology Zvornik

Code		Status	Semester	ECTS	
		Obligatory	VI	4	
Teacher	Mitar Perusic, P	hD full professor			

Teaching

Dusko Kostic, MSc, teaching assistant assistant

Teaching work	kload/Number of	hours (weekly)	Individ	dual work (hours per	Student's work coefficient, S <sub>o</sub>	
Lectures	Auditory exercises	Laboratory Exercises	Lectures	Auditory exercises	Laboratory Exercises	So
2	1	0	30	15	0	1.50
	2*15 + 1*15 + 0	*15 = 45 h		2*15*1 50 +1*15*1 50 + 0*15*1 50 = 67 5		

Total course workload (hours per semester, teacher + student): 45+ 67.5 = 112.5

## Learning outcomes

After finishing the course, students will be able to: 1. find and use literature data on individual process equipment

- 2. understand individual technological processes and requirements regarding process equipment
- 3. size the process equipment
- 4. carry out the selection of optimal process equipment required by a certain technological process.

## Prerequisites None

Teaching methods Lectures, class exercises and individual work

- Introduction to design. 1.
- Concept and types of process equipment, classification. 2.
- 3. Primary process equipment.
- 4. Secondary process equipment.
- 5. Heat exchange devices. Types and characteristics.
- 6. Basic elements for the design of heat exchangers.
- 7. Columns: methods of achieving contact, selection of column type, choice of floor type,

calculation of binary and multicomponent mixtures.

## **Syllabus** outline per week

- 8. Filling columns, filler type and size, column hydrodynamics, column diameter, height, calculation of columns, columns with vertical floors. Elements for designing columns. Mid-term test/Colloquium 1.
- 10. Separation devices: precipitators, filters, centrifuges.
- 11. Crystallizers: types, options, calculation.
- 12. Drying devices, basics for dimensioning and design.
- 13. Pumps and compressors.
- 14. Storage of liquids, gases and solids.
- 15. Transport of liquids and gases. Design requirements. Analysis of engineering thermodynamics chapters (seminar paper presentation). Mid-term test/Colloquium 2.

Main literature

Author/s	Title, publisher	Year	Page	
J. R. Couper, W. R. Penney, J.	Chemical Process Equipment, revised 2nd edition,	2009	1-781	
R. Fair, S. M. Wallas	Elsevier			
	Additional reading			
Author/s	Title, publisher	Year	Page	
F. sef, Ž. Olujic,	Design of process plants, SKTH, Zagreb,	1988	1-536	
G. Towler, R. Sinnott	Chemical Engineering Design, Elsevier	2008	541-1060	
E. Beer	Manual for sizing chemical process industry devices,	1994	1-805	
E. Deel	SKTH, Chemistry in Industry, Zagreb	1334	1-000	

Obligations,				Type of stud	dent evaluation			Points	Percentage	
а	ssessment		Pre-exam	obligation						
n	nethods	and					Atten	dance	6	6 %

grading system		Mid-term test I	25	25%
		Mid-term test II	25	25 %
		Seminar paper	14	14 %
	Final exam			
		Final exam	30	30 %
	TOTAL		100	100 %
Web page	www.tfzv.ues.rs.ba			
Date	2023			