	UNIVERSITY OF EAST SARAJEVO Faculty of Technology Zvornik					
	Study programme: *Chemical Engineering and Technology*					
	Cycle I		Year III			
Course title	Thermal and Diffusion Process Engineering					
Department	Department for Process Engineering– Faculty of Technology Zvornik					

Course code	**Course status**	**Semester**	**ECTS**
04-1-030-6	Compulsory	VI	7

Teacher	Radislav Filipović, PhD, full professor
Teaching assistant	Duško Kostić, MSc, senior teaching assistant

Number of hours/ teaching workload (per week)			**Individual student workload (in hours per semester)**			**Student workload coefficient S_o**
Lectures	**Auditory exercises**	**Laboratory exercises**	**Lectures**	**Auditory exercises**	**Laboratory exercises**	**S_o**
3	1	2	60	20	40	1.33
3*15+1*15+2*15=90 hours			(3*15*1.33+1*15*1.33+2+15*1.33)=120 hours			
Total course workload 90 + 120=210 hours per semester						

Learning outcomes	After finishing the course, students will be able to: 1. demonstrate and utilize the knowledge of the phenomena and laws of the heat and mass transfer processes 2. choose the most favorable thermal and diffusion operation based on the basic physical and chemical properties of the mixture components 3. understand how different parameters affect the degree of separation and efficiency of different heat and diffusion processes 4. set up a mass and heat balance and, in combination with equilibrium diagrams, analyze separation operations 5. develop the experimental skills necessary for the work and analysis of heat diffusion processes.
Prerequisites	Mechanical Process Engineering
Teaching methods	Lectures, auditory and laboratory exercises, mid-term tests (colloquia).
Syllabus outline per week	**Lectures** 1. Introduction - technological operations and technological processes. Heat and heat exchange. Heat exchange by conduction. 2. Heat exchange by convection. Heat exchange by radiation. Passage of heat. Heat balance. 3. Heat exchangers 4. Solution and dissolution. Evaporation-vaporization. 5. Crystallization 6. Drying 7. Dryers 8. **Systematics and analysis of previously covered material.** 9. Basic terms and mass transfer operations. Distillation 10. Rectification 11. Absorption 12. Adsorption 13. Liquid-liquid extraction 14. Solid-liquid extraction 15. **Systematics and analysis of previously covered material.** **II Practical exercises** **III Laboratory exercises** 1. Calculation of the heat transfer coefficient from the criterion equation 2. Experimental determination of the heat transfer coefficient 3. Determination of the heat transfer coefficient 4. Heat exchangers 5. Crystallization 6. Spray drying 7. **Laboratory mid-term test (*Colloquium*) I**

	8. Distillation 9. Absorption 10. Adsorption 11. Liquid-liquid extraction 12. Solid-liquid extraction 13. **Laboratory mid-term test (*Colloquium*) II** 14. Visit to the factory 15. Systematization of materials. Attendance verification. **Laboratory mid-term test (*Colloquium*) I and II** Mid-term tests are taken after the 8th week and the 15th week. Semester verification is required after the 15th week.

Obligatory reading

Author	Title, publisher	Year	Pages
Đorđević, B., Šerbanović, S., Tasić, A., Živković, E., Kijevčanin, M., Valent, V.	Toplotne operacije, Tehnološko-metalurški fakultet, Beograd	2013	1-63; 99-122; 125-177; 321-342
Ahmetović, E.	Toplinske operacije u procesnom inženjerstvu, Tehnološki fakultet, Tuzla	2010	103-214
Sovilj, M.	Difuzione operacije, Tehnološki fakultet, Novi Sad	2004	1-320
Cvijović, S	Toplotne operacije-Zadaci sa izvodima iz teorije, Akademska misao, Beograd	2007	1-113
Cvijović, S., Bošković Vragolović, N., Pjanović, R.	Difuzione operacije- Zadaci sa izvodima iz teorije, Akademska misao, Beograd	2007	1-171

Additional reading

Author	Title, publisher	Year	Pages
McCabe, W.K., Smith, J.C., Harriot, P.	Unit Operations of Chemical Engineering, McGraw-Hill, New York	2005	299-928

	Type of student evaluation	Grade points	Percentage
Obligations, assessment methods and grading system	Pre-exam obligations		
	Attendance	6	6 %
	Mid-term test I	25	25 %
	Mid-term test II	25	25 %
	Seminar paper	14	14 %
	Final examination		
	Final examination (oral)	30	30 %
	Total	100	100 %
Web page	www.tfzv.ues.rs.ba		
Date	2023		