

Course title	MANAGEMENT OF WASTEWATERS OF FOOD INDUSTRY						
Code	ZDIT50						
Study	Postgraduate Interdisciplinary University Study on Nature and Environment Protection						
Semester	III.						
ECTS	5						
Course state	Elective						
Professors	Academician Vlasta Piližota						
Colaborators	Doc.dr.sc. Marina Tišma, assistant professor, izv. prof.dr.sc. Natalija Velić, associate professor						
Entrance conditions							
Aim	To introduce students to the types of waste and how to properly manage the waste materials generated during the production process in different types of food industry with the aim of preservation of environment, and the methods and possibilities for using waste materials.						
Learning outcomes	1- Differentiate and compare different waste management systems. 2- Interpret and compare national and international legislation on waste management. 3- Classify waste materials of the food industry and analyze site of emergence, removal, processing, re-use and disposal costs. 4- To differentiate and explain the waste processing methods of the food industry. 5- To propose appropriate processing methods and management systems based on available production process information.						
Connections between students activity, learning outcomes and evaluation	Students activity	ECTS	Learning outcomes	Course activity	Evaluation methods	Points*	
						min	max
	Active participation	1	1-4	Lectures	Minutes	5	15
	Independent preparation of seminar	2	1-4	Seminars	Predefined criteria	15	25
	Preparation for the exam	3	1-4	Problems solving	Exam	35	60
	Total	6				55	100
Consultations							
Teaching form	Lectures		Seminars		Exercises		
No. of hours	10		5		-		
Content	Overview of EU and CRO legislation related to food waste management. Classification of waste materials of the food industry. Analysis of waste material composition. Analysis of waste removal costs, their processing, re-utilization and disposal. Waste disposal monitoring Systems. Reducing the amount of waste. Waste management systems (ISO 14000 and ISO 14040). Methods of solid waste processing from the food industry. Biological methods of solid waste treatment - state and trends. Case studies. Methods of wastewater treatment from the food industry. Biological processing of waste-water from the food industry. An overview of advanced biological processes for removing pollutants from wastewaters and new monitoring methods. Methods of waste gases treatment. Seminar: Examples of optimization of the process using non-conventional and conventional methods for energy optimization.						

Compulsory literature	- Arvanitoyannis IS: Waste Management for Food Industries, Academic Press, Elsevier Inc., Amsterdam, 2008.
Optional literature	- Woodard F: Industrial Waste Handling Handbook, Butterworth-Heinemann, Boston, 2001. Different laws/regulations in the field of environmental protection.
Completion condition	
Exam form	Written and accepted seminar work and oral exam
Possible teaching languages	Croatian and English
Form of quality monitoring	The procedures for carrying out certain activities related to the monitoring, assurance and improvement of the quality of the studies will be carried out in accordance with the current Rulebook on the organization and functioning of the Higher Education Quality Assurance System at the University of Osijek. The bearer of the subject can also perform other ways of monitoring the quality depending on the specifics of the subject, such as questionnaire.