Title	**Waste Management in Food Industry**
Code	ZDIT50
Study Program	Postgraduate Interdisciplinary University Programme Environment protection and Nature Conservation
Semester	III.
ECTS	5
Status	elective
Lecturer	full professor Lidija Tadić, PhD
Co-Lecturers	
Requirements for Enrolment	No requirements.
Objectives	Introduce students to the types of waste and ways of proper management of waste material produced during the production process in different types of food industry with the aim of preserving the environment, and the methods and possibilities of using waste products.
Learning Outcomes	1- distinguish and compare various systems of waste management. 2- interpret and compare national and international legislation regarding the management of waste materials. 3- classify waste products of the food industry and to analyze the place of occurrence, the cost of the removal, treatment, reuse and disposal. 4- differentiate and explain the methods of processing waste products of the food industry. 5- propose appropriate processing methods and management systems on the basis of available information on the production process.

Connection between Learning Outcomes, Curricular and Student Activities

Student Activities	ECTS	Learning Outcomes	Curricular Activities	Methods of Assessment	Credits*	
					min	max
Attending lectures	0.5	1-5	Attendance at the classes	Record of presence	5	10
Activity on classes	0.5	-	Attendance with active participation	Record of presence	10	15
Seminar/written	.,5	1-5	Literature study and seminar work	Presentation and defense seminar	15	30
Oral / final exam	2.5	1-5	Learning and oral answers	Final exam	30	45
Total	**5.0**				**60**	**100**

Consultations	According to the agreement with the teacher.		
Learning Activities	**Lectures**	**Seminars**	**Practice**
Hours	10	5	0
Contents / Teaching Units	Overeview of the EU and the Republic of Croatia legislation concerning the management of waste products of the food industry. Classification of waste products of the food industry. Analysis of the composition of waste. Analysis of the cost of removing waste materials, processing, re-use and disposal. Systems for tracking control of waste disposal. Waste reduction. Waste management systems (ISO 14000 and ISO 14040). Methods of solid waste from the food industry. Biological methods of processing solid waste - Status and Trends. Case Studies. Methods of treatment of wastewater from the food industry. Biological treatment of wastewater from food industry. Overview of		

	advanced biological process of removing pollutants from wastewater and new methods of monitoring. Methods of processing output (waste) gases. Seminar: Examples of process optimization by using unconventional and conventional methods of energy optimization.
Obligatory Literature	Arvanitoyannis IS: Waste Management for the Food Industries, Academic Press Elsevier Inc., Amsterdam, 2008.
Recommended literature	Woodard F: Industrial Waste Treatment Handbook, Butterworth-Heinemann, Boston, 2001. The various legislation relating to environmental protection.
Requirements for Aquiring Signature	The fulfillment of obligations students / attendants
Type of Exam	Written and accepted seminar and positive score at the oral examination.
Lectures Language	Croatian language; the possibility in English
Quality Monitoring	Procedures, and processes for conducting certain activities related to monitoring, assurance and improving the quality of studies will be conducted in accordance with the current Regulations on the organization and operation of quality assurance system of higher education at the University of Osijek. Course teacher can carry out other ways of monitoring the quality depending on the specifics of the case.