DISCIPLINE DESCRIPTION

1. Information on the study programme

1.1 Academic institution	UNIVERSITY OF ORADEA
1.2 Faculty	FACULTY OF ENVIRONMENTAL PROTECTION
1.3 Department	ENGINEERING OF FOOD PRODUCTS
1.4 Field of study	CONTROL AND EXPERTISE OF FOOD PRODUCTS
1.5 Cycle of study	BACHELOR
1.6 Study programme/Qualification	TECHNOLOGY OF AGRIFOOD PRODUCTS /
	ENGINEER

2. Information on the discipline

2.1 Name of discipline				DXI	COLOGY OF AGR	IFOOD	PRODUCTS	
2.2 Course holder			Sei	nior I	Lecturer Eng. Adriana	Chiş, PhI)	
2.3 Seminar/Laboratory/Project			Sei	Senior Lecturer Eng. Adriana Chiş, PhD				
holder								
2.4 Year of	Ι	2.5 Semest	er	II	2.6 Type of	Exam	2.7 Regime of	С
study					evaluation		discipline	

(C) Compulsory; (O) Optional; (E) Elective

3. Total estimate time (hours per semester of didactic activities)

I				/		
3.1 Number of hours per week	4	out of whi	ch: 3.2	2	out of which 3.3	2
		course			seminar/laboratory/project	
3.4 Total hours in the curriculum	56	out of whi	ch: 3.5	28	out of which 3.6	28
		course			seminar/laboratory/project	
Time allotment						hours
Study assisted by manual, course su	ipport,	bibliograph	y and not	tes		18
Additional documentation in the library/ on specialised electronic platforms and in the field						6
Preparation of seminars/laboratories/ topics/reports, portfolios and essays						12
Tutorship						4
Examinations						2
Other activities: documentation on laboratory optical and chromatographically techniques in					2	
food laboratory in Bihor County						
3.7 Total hours of individual study 44						
3.9 Total hours per semester 100						

4. Prerequisites (where appropriate)

3.10 Number of credits

4.1 curriculum	"General Chemistry" and "Organic Chemistry" exams passed
4.2 competences	Fundamental knowledge of general chemistry, inorganic and organic, chemical composition of foods, elementary physics, the use of Microsoft Office basic programs

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5. Conditions (where appropriate)

5.1. related to course	Projector, screen, internet connection
5.2. related to laboratory	Laboratory devices and chemical reagents used for experiments in accord
	with discipline curriculum

6. Spec	cific competences acquired
	Active use of standard and legal norms regarding vegetal and animal raw materials
	The monitoring of a food product during the technological process and storage until the
	consumption, in order to maintain its sanitary quality.
ţe Lle	Description and use of concepts, theories and basic methods used in the quality control and
ten ona	expertise of food products, regarding the chemistry of the compounds that determine the quality
esic	and traceability of food products, the transformations they suffer during processing, transport and
om	storage, the devices and methods of analysis and determination of these compounds and the
D1 D1	legislation in the field.

7. Objectives of discipline (coming from the specific competences acquired)

7.1 General objective	•	High qualified specialist in food control field training.
7.2 Specific objectives	•	Acquiring by the students of knowledge related to food pollution by chemical substances originated from environment, row materials or due to industrial/home processing Acquiring by the students of practical methods related to chemical residues isolation and determination from foods

8. Content*/

8.1 Course	Methods of	No. of
	teaching	hours/Remarks
Food Toxicology object, types, classification of chemical toxic		2
substances fin food industry		
Quantification of toxicity, factors of influence		2
Sources ant paths of chemical contamination of foods by		
environmental factors related to agrifoods processing		
Air pollution		2
Sources and types of pollutants		
Soil pollution		
Sources and types of pollutants		
Water pollution		2
Main water pollutants, source and influence on foods processing		
Types of waste waters	_	
Water quality for food industry		2
Water pollution and purification in food industry	Interactive lecture	
Foods pollution	and PowerPoint	
Existing and added substances with toxic potential in foods	presentation	
Legal requirements		
Chemical residues from natural sources		1
Nitrites and nitrates		3
Toxic substance of chemical pollution and contamination		
N - nitroso - compounds;		2
Biometals with toxic potential		
Heavy metals Hg, Pb, Cd, Sn, As		2
Pesticides		2
Dioxins and PCBs (Polychlorinated biphenols and furans)		2
PAH (Polycyclic aromatic hydrocarbons),		
Acrylamide, Melamine, 3 MCDP (3-monochlorpropane-1,2 diol)		2
Mycotoxins		2
Toxic potential from food contact materials		2
Bibliography		
1. Alexa, Ersilia, 2003, Contaminanți în produse vegetale, Ed. Eurob	it, Timişoara	

- 2. Banu C-tin, 2008, Suveranitate, securitate și siguranță alimentară, Editura ASAB
- 3. Banu C-tin, 2009, Tratat de industrie alimentară, Editura ASAB
- 4. Hura Carmen, 2005 Contaminarea chimică a alimentelor în România, vol I, II și III, Editura Cermi, Iași
- 5. Banu C-tin, 1982, Produse alimentare și inocuitatea lor, Editura Tehnică București,

- 6. Chiș Adriana, 2009, Elemente de toxicologie alimentară Contaminanți chimici, Ed. Universității din Oradea
- 7. Chiș Adriana, 2009, Toxicologia mediului Noțiuni teoretice și practice, Ed. Universității din Oradea
- 8. Chiș Adriana, 2021, Îndrumător de lucrări practice Toxicologie alimentară
- 9. Cojocaru I., 1995, Surse, procese si produse de poluare, Editura Junimea Iasi
- 10. Cotrău M, Popa Lidia, Stan T., Preda N., Kincses-Ajtay Maria 1991, Toxicologie, Editura Didactică și pedagogică, Bucuresti
- 11. Hura Carmen, 2005 Contaminarea chimică a alimentelor în România, vol I, II și III, Editura Cermi, Iași
- 12. Lu Franck C., 1992, Toxicologie Donnees generales, procedures d'evaluation, organes cibles, evaluation des risques, Ed. Massou Paris Milan Barcelona Bonn
- 13. Mănescu S. (sub redacția), 1985 Tratat de igiena, Vol II, Editura Medicală București
- 14. Savu, C. și Narcisa Georgescu, 2004, Siguranța alimentelor, Ed. Semne, București
- 15. Tămaș V, Şerban M, Cohut Maria, 1981, Biochimie medicală veterinară, Editura Didactică și Pedagogică București
- 16. *** Colecția de standarde industria alimentară
- 17. *** Legis program informatic referitor la legislatia din Romania
- 18. *** www.codexalimentarius.net
- 19. *** w.w.w.efsa.europa.eu

	Methods of	No. of
	teaching	hours/
		Remarks
8.3 Laboratory		
Work protection in toxicology laboratory		2
Analytical methods used for chemical residues in foods, specific calculation and		2
unit of mesure		
Toxic potential gases from atmosphere determination		2
Drinkable Water quality indicators;		2
Water anions and cations with toxic potential determination by rapid		
spectrophotometry	Practical	
Waste water from food industry quality indicators	applications	2
Suspension determination		
Solved oxygen as indicator of organic residues presence (Winkler		2
method);		
Oxygen deficiency; BOD (Biochemical Oxygen Demand)5		
Chemical oxygen demand COD-Mn (Chemical Oxygen Demand by		2
KMnO ₄)		
Natural toxic substances; oxalic acid determination from tea and coffee		2
Methods of toxics isolation from foods		4
Nitrites and nitrates from vegetal and animal origin food		2
Deproteinated extracts getting		
Calibration curve and samples handling – leafy vegetables		2
Calibration curve and samples handling – meat products		2
Paper presentation		2
Bibliography		

- 1. Chiș Adriana, 2008, Ecotoxicologie alimentară: aspecte teoretice și practice, Ed. Universității din Oradea
- 2. Chiş Adriana, 2009, Toxicologia mediului Noțiuni teoretice și practice, Ed. Universității din Oradea
- 3. Cotrău M., Proca Maria, 1988, Toxicologie analitică, Editura Medicală, București
- 4. Drugă Marioara, 2002, Ghid practic de toxicologie agroalimentară, editura MIRTON, Timișoara
- 5. Fabritius K., Cupsa Cristina, Purcarea Mihaela,2004, Masuri de urgenta in cazul expunerii la pesticide, GEEA
- 6. Hura Carmen, 1995, Metode de determinare a reziduurilor de pesticide din produsele alimentare, Editura Septentrion Iași

- 7. Hura Carmen, 2006, Ghid de laborator Metode de analiză pentru produse alimentare, Editura Cermi, Iași
- 8. Mănescu S., Dumitrescu H., Bărduță Zenovia, Diaconescu Mona 1982, Chimia sanitară a mediului Alimente, Ed. Medicală București
- 9. Mănescu S., Cucu M., Diaconescu Mona 1994, Chimia sanitară a mediului Apă, aer, sol, Ed. Medicală București
- 10. Rotaru, O. și M. Mihaiu, 2002, Igiena veterinară a produselor alimentare Patologie prin alimente, Editura Todesco, Cluj-Napoca
- 11. Șuțeanu E. Danielescu N, Popescu O., Trif Alexandra, 1995, Toxicologie și toxicoze, Editura Didactică și Pedagogică București
- 12. *** Colecția de standarde industria alimentară
- 13. *** Legis program informatic referitor la legislatia din Romania
- 14. *** www.codexalimentarius.net

20. Corroboration of discipline content with the expectations of the epistemic community, professional associations and representative employers from the field corresponding to the study programme

The students will acquire knowledge related to chemical substances that can contaminate water and foods, including the contamination pathsways and ways of avoiding contamination and the European legal requirements in the field.

* The content, respectively the number of hours allocated to each course / seminar / laboratory / project will be detailed during the 14 weeks of each semester of the academic year.

IU. EVALUATION			
Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the final grade
10.4 Course	Test answer	Write test – 7 questions	60%
10.6 Laboratory	 Execution and calculation of practical determinations Elaboration and sustain of the paper 	 Global evaluation Continuous evaluation based on laboratory practical activities Presentation of a paper referring to a chemical residue in foods or drinkable and waste water 	20% 20%
10.8 Minimum s laboratory activi	standard of performance: minin ties	num 4 questions of the test and minimum 5 g	rade in

10. Evaluation

Date of completion

Signature of course holder**

Signature of seminar/ laboratory **

20.06.2023

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Date of approval in the department

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Signature of the Head of Department

Associate professor Eng Adrian Timar PhD atimar@uoradea.ro

Dean signature Associate professor Eng Cristina Maerescu PhD cristina maerescu@yahoo.com

** - Name, first name, academic degree and contact details (e-mail, web page, etc) will be specified