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 disci	pline		INORGANIC AND ANALYTICAL CHEMISTRY					
2.2 Course holder			Senior Lecturer Eng. Adriana Chiş, PhD					
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)

3.1 Number of hours per week	3	out of which	ch: 3.2	2	out of which 3.3	1
		course			seminar/laboratory/project	
3.4 Total hours in the curriculum	42	out of which	ch: 3.5	28	out of which 3.6	14
		course			seminar/laboratory/project	
Time allotment						hours
Study assisted by manual, course su	ipport, l	bibliograph	y and not	tes		20
Additional documentation in the library/ on specialised electronic platforms and in the field					8	
Preparation of seminars/laboratories/ topics/reports, portfolios and essays					10	
Tutorship					10	
Examinations				2		
Other activities: documentation on laboratory optical and chromatographically techniques in			8			
food laboratory in Bihor County						
3.7 Total hours of individual stud	ly	58				
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. Spe	cific co	mpetences acquired
	-	Description and use of basic concepts, theories and methods of analytical chemistry used at
		the quality control of food raw materials and food products
	•	Explanation and interpretation of concepts and basic chemical and instrumental methods of
s		analytical chemistry which determines the quality of food raw materials and of food
nce		products, the transformations they suffer during processing, transportation and storage
Professional competences	•	Evaluation of the features, performances and limitation of methods and devices used in the
du		field of analysis and quality control of food products
col	•	Application of the principles and analytical methods of chemical and instrumental type for
ıal		the solving of the problems related to the quality control and expertise of the food raw
ior		materials and food products related to the legislation in the field
ess	•	Description and use of concepts and theories regarding the use and control of the raw
rof		material and food products through chemical analysis and instrumental methods.
Р		

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

7.1 General objective	• Getting the fundamentals of qualitative and quantitative analytical methods, both chemical and instrumental as a start for understanding and appliance of those methods regarding row materials and final products of food industry.
7.2 Specific objectives	• Illustration of chemical and instrumental analytical methods for vegetal and animal foods quality determination.

8. Content*/

8.1 Course	Methods of	No. of
	teaching	hours/Remarks
Inorganic and Analytical Chemistry object; Fundamental analytical		2
methods		
Inorganic substances involved in analytical determinations		2
Chemical reactions in Analytical Chemistry		2
Solutions: properties and concentration		
Preliminary operations in		2
Fundaments in qualitative analysis applied on foods control		
Quantitative analysis principles; Volumetric methods		2
Neutralisation volumetric analysis		
Applicability on foods control		
Precipitation volumetric analysis		2
Complexonometric volumetric analysis	Interactive lecture	
Applicability on foods control	and PowerPoint	
Redox volumetric analysis	presentation	2
Applicability on foods control		
Gravimetric quantitative analysis		2
Applicability on foods control		
Separation principles: methods and applicability on foods control for		2
major and minor components		
Instrumental analysis: principles of qualitative and quantitative		2
determinations, types of methods		
Types of methods used in foods control		
Optical methods: principles, lows, types		2
Molecular and atomic spectroscopy in foods control		3
Chromatographic analysis: principles of qualitative and quantitative		3
determinations, types of methods		
Types of methods used in foods control		
Bibliography		

1. Chirilă Elisabeta, 2004, Chimie analitică calitativă, Ovidius University Press, Constanța

2. Chiș Adriana, 2009, Curs de chimie analitică calitativă, cantitativă și instrumentală, Editura Universității Oradea

- 3. Chiș Adriana, 2021, Curs de chimie analitică, uz intern
- 4. Gocan S.și Simona Cobzac, 2006, Metode moderne de prelucrare a probelor organice, Editura Risoprint, Cluj-Napoca
- 5. Hodişan T., Cimpoiu Claudia, Haiduc Iovanca, Hodişan S., 2002, Teorie şi aplicații în chimia analitică, Editura Risoprint, Cluj-Napoca
- 6. Liteanu C, 1972, Metode de separare în chimia analitică, înstitutul Central de Cercetări Chimice, București
- 7. Neacşu H. I. şi Janstschi L., Chimie analitică și instrumentală, 2006, Editura Academic pres & AcademicDirect Cluj-Napoca
- 8. Pietrzyk D. și C. Frank, 1989, Chimie analitică, Editura Tehnică, București

o. Thereby D. 31 C. Thank, 1969, Chinne analitica, Editara Teninea, D	uouroșu	
	Methods of	No. of
	teaching	hours/
		Remarks
8.3 Laboratory		
Work protection in analytical chemistry laboratory		1
Volume and mass measurements		2
Dilution of solutions; Correction factor of solutions		1
General laboratory operations		1
Neutralisation volumetric analysis		2
Acidity of animal and vegetal origin foods		
Precipitation volumetric analysis	Practical applications	1
Salt content of animal and vegetal origin foods - Mohr method		
Complexonometric volumetric analysis		1
Water hardness		
Colorimetric determination: Iron content determination		2
Spectrophotometry - Calibration curves for nitrites in water – Griess method		2
Spectrophotometry - Calibration curves for nitrites in water - Griess method		1

Bibliography

- 1. Bologa, N., Barbulescu, G., Burda, Al., 2007, Merceologie: metode si tehnici de determinare a calitatii, Ed.Universitară, Bucuresti
- Chircan, I., Toporan, Daniela, 2005, Indrumator pentru lucrari practice în industria cărnii și a peștelui, Ed. Sitech, Craiova
- 3. Chiș Adriana, Caiet de lucrări practice, 2012, Editura Universității din Oradea
- 4. Chiș Adriana, Caiet de lucrări practice, 2021, uz intern
- 5. Danilevici, C-tin, 2003, Controlul cărnii și a produselor din carne prin metode senzoriale si fizicochimice, Ed. Bibliotheca, Târgoviște
- 6. Guș Camelia, Semeniuc Cristina, 2005, Stabilirea calității laptelui și a produselor lactate, Editura "Risoprint" Cluj-Napoca
- 7. Nour, Violeta, 2008, Metode de analiză și control în industria cărnii și a produselor din carne, Ed.Sitech, Craiova
- 8. Rotaru, O. și M. Mihaiu, 2002, Igiena veterinară a produselor alimentare Patologie prin alimente, Editura Todesco, Cluj-Napoca
- 9. ***Îndrumătoarele de laborator de la desciplinele de control aferente planului de învățământ aflate în biblioteca Facultății de protecția Mediului
- 10. ***Colecția de standarde industria alimentară și calitatea apei
- 11. *** LEGIS program informatic referitor la legislatia din Romania
- 12. *** www.codexalimentarius.net

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

Students will acquire knowledge and practical skills needful to fulfil control activities in foods control through chemical and instrumental analysis.

* 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.

10.	Evaluation	
10.	L'aluation	

Type of	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in		
activity			the final grade		
10.4 Course	Test answer and problem	Write test – 8 questions and a problem	70%		
	solving				
10.6	• Execution and	Global evaluation			
Laboratory	calculations of practical	• Continuous evaluation based on	30%		
	Works including	laboratory practical activities			
	homework				
10.8 Minimum standard of performance: minimum 4 questions of the test and minimum 5 grade in					
laboratory activities					

Date of completionSignature of course holder**Signature of seminar/ laboratory **20.06.2023.Senior lecturer
Eng. Adriana Monica Chiş, PhD
adrianamonicachis@gmail.com
achis@uoradea.roSenior lecturer
Eng. Adriana Monica Chiş, PhD
adrianamonicachis@gmail.com
achis@uoradea.ro

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 c<u>ristina maerescu@yahoo.com</u>

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