# Annex 6

# **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	<b>CONTROL AND EXPERTISE OF FOOD PRODUCTS</b>
1.5 Cycle of study	BACHELOR
1.6 Study programme/Qualification	PROCESSING TECHNOLOGY OF AGRICULTURAL
	PRODUCTS

#### 2. Information on the discipline

2.1 Name of discipl	ine		FOOD ADDITIVES AND INGREDIENTS IN THE FOOD					DD
			INDUSTRY					
2.2 Course holder			Sir	nona	Ioana VICAS			
2.3 Seminar/Laboratory/Project			Simona Ioana VICAS					
holder								
2.4 Year of study	II	2.5 Semeste	er	IV	2.6 Type of	EX.	2.7 Regime of discipline	С
					evaluation			

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

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

		/			
3.1 Number of hours per week	4	out of which:	2	out of which 3.3	2
-		3.2 course		seminar/laboratory/project	
3.4 Total hours in the curriculum	56	out of which:	28	out of which 3.6	28
		3.5 course		seminar/laboratory/project	
Time allotment		·			
					hours
Study assisted by manual, course	support, b	ibliography and not	es		25
Additional documentation in the library/ on specialised electronic platforms and in the field					10
Preparation of seminars/laboratories/ topics/reports, portfolios and essays					9
Tutorship					
Examinations					
Other activities					
3.7 Total hours of individual	44				
study					
3.9 Total hours per semester	100				
3.10 Number of credits	4				

#### **4. Prerequisites** (where appropriate)

1	
4.1 curriculum	Knowledge of organic chemistry, biochemistry, analytical chemistry

4.2 competences	The ability to work after a protocol laboratory, to make assumptions and
	observations, to make charts and tables based on the results obtained in the
	laboratory

### 5. Conditions (where appropriate)

5.1. related to course	Classroom, equipped with laptop, projector and				
	adequate softw	vare			
5.2. related to	Laboratory	equipped	with	laboratory	instruments,
seminar/laboratory/ project	spectrophotom	eter, reagents	, solutions	, glass, material	s, projector

6. Spe	cific competences acquired
	Identification of specialized terminology on the quality, standards and food hygiene in order to collaborate and cooperate with the authorities responsible for food safety and quality
tences	Identification of authorities responsibilities related to food safety and consumer protection.
ompe	Identification of specific problems related to food safety and responsibilities for their solving.
ssional c	Identification of elementary concepts, theories, models and methods on the possibility of extending a production activity in the food industry.
Profes	Establishing specific problems and risks related extension activities.
Transversal competences	-

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

J \U							
7.1 General objective	Familiarize students with the theory and practice on the use of						
	food additives, synergistic effect of using additives and						
	toxicological aspects related to each additive. The course content						
	and practical activities are so organized as to be specific to the						
	field of processing technology of agricultural products						
7.2 Specific objectives	Familiarize students with the theoretical notions about the main						
	food additives (preservatives, antioxidants, colorants, acidifiers						
	etc.).						
	Familiarize students with the mechanisms of action of food						
	additives.						
	The ability of students to apply certain laboratory methods for						

identifying food additives.
Knowledge of legislation on food additives.

## 8. Content\*/

8.1 Course	Methods of teaching	No. of
		hours/Remarks
The definition of food additive. Classification of food	Exposure, discussion,	2
additives. Codification of food additives. Terms of use	PowerPoint	
of food additives.	presentations	
Toxicological evaluation of food additives.	Exposure, discussion,	2
The legislation on food additives. Codex Alimentarius.	PowerPoint	
	presentations	
Food preservatives. Overview. Role. Classification.	Exposure, discussion,	2
Organic preservative additives. Food preservatives	PowerPoint	
(E200-E240).	presentations	
Food preservatives. Inorganic food preservatives.	Exposure, discussion,	2
Food preservatives (E249-E290).	PowerPoint	
	presentations	
Oxidation of foodstuffs.	Exposure, discussion.	2
	PowerPoint	
	presentations	
Factors that affect the oxidation of oils.	Exposure. discussion.	2
	PowerPoint	
	presentations	
Antioxidants. Definition. Classification. Mechanisms.	Exposure, discussion.	2
	PowerPoint	
	presentations	
Synthetic antioxidants Natural antioxidants	Exposure discussion	2
Synthetic antioxidants. Patarar antioxidants.	PowerPoint	
	nresentations	
Natural and synthetic <b>food dyes</b>	Exposure discussion	2
raturar and synthetic root uyes.	PowerPoint	
	nresentations	
Enzymatic and non-enzymatic browning food	Exposure discussion	2
(Maillard reaction)	PowerPoint	
(Wallard Teactori).	nresentations	
Flavors Flavors and flavor enhancers Relationships	Exposure discussion	2
hetween chemical structure and aromatic qualities	DaverDoint	
between enemiear structure and aromatic quanties.	rowerrome presentations	
Asidifions	Exposure discussion	2
Aciumers.	Exposure, discussion,	
	PowerPoint	
Natural sweeteners and sweeteners.	Exposure, discussion,	2
	PowerPoint	

	presentations	
Enzymes used in food industry	Exposure, discussion,	2
	PowerPoint	
	presentations	

Bibliography

Branen Larry, P. Davidson Michael, Seppo Salminen, John H. Thorngate III, Food Additives, Second Edition Revised and Expanded, 2001, Marcel Dekker, New York • Basel

Socaciu C., Curs de chimie alimentara si aditivi alimentari, Cluj-Napoca, 1997

Tofana M., Aditivi alimentari Interactiunea cu alimentul, Ed. AcademicPres, Cluj Napoca, 2006 Banu C., -coordonator, Manualul inginerului de industrie alimentara. Vol. I si II, Ed Tehnica, Bucuresti, 1998

Banu C., -coordonator, Aditivi si ingrediente pentru industria alimentara, Editura Tehnica, 2000.

Vicas S.I. - Aditivi alimentari -curs, Ed. Univ. Oradea, 2015, ISBNe 978-606-10-1663-1

The courses are uploaded to the e-learning platform of the University of Oradea, which can be accessed at https://e.uoradea.ro

8.2 Seminar	Methods of teaching	No. of hours/
		Remarks
		2
8.3 Laboratory		
General rules on work protection in laboratory.	Exposure, discussion	2
Preparation the food samples in order to make physico-	Explanations,	2
chemical analysis.	exemplification, dialogue,	
	case study, videos	
Method for the solutions preparation in the laboratory.	Explanations,	2
Elements of calculation.	exemplification, dialogue,	
	case study	
General remarks on food additives.	Explanations,	2
	exemplification, dialogue,	
	case study	
Ingredients. Determination of sodium chloride. Mohr	Students performing the	2
method.	experimental section with	
	the professor's assistance.	
Qualitative and quantitative determination of	Students performing the	2
preservatives. Identification of SO <sub>2</sub> and its derivatives	experimental section with	
(E220-228).	the professor's assistance.	
Preservatives. Determination of salicylic acid.	Students performing the	2
	experimental section with	
	the professor's assistance.	
Preservatives. Determination of sodium nitrite in	Students performing the	2
different food products	experimental section with	
	the professor's assistance.	
Antioxidants. Determination of ascorbic acid by	Students performing the	2
titrimetric method.	experimental section with	
	the professor's assistance.	
Antioxidants. Determination of antioxidant activity by	Students performing the	2
DPPH method (spectrophotometric method) of	experimental section with	
foodstuff.	the professor's assistance.	

Antioxidants. Determination of antioxidant capacity of	Students performing the	
different food by DPPH method.	experimental section with	
	the professor's assistance.	
Food colorants. The separation of food dye by thin	Students performing the	2
layer chromatography (TLC).	experimental section with	
	the professor's assistance.	
Acidulants. Determination of acetic acid by the	Students performing the	2
titrimetric method. Processing of experimental results.	experimental section with	
	the professor's assistance.	
Enzymes. Determination of enzymatic activity of	Students performing the	2
polyphenol oxidase. The implication of the enzyme in	experimental section with	
the browning process of foods.	the professor's assistance.	
Laboratory test. The presentation of report regarding to	Testing the theoretical and	2
certain food additive.	practical knowledge	
	acquired by the student in	
	the field of food additives	

Bibliography

Vicas S.I., Morna A. –Aditivi alimentari –caiet de lucrări practice, Ed. Univ. Oradea, 2015, ISBNe 978-606-10-1664-8.

Tofana M., Socaci S., Aditivi alimentari, Indrumator de laborator, Editura Mega, 2011.

Oranescu E., Aditivi alimentari, necesitate si risc, Editura Agir, Bucuresti, 2008.

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\* 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.

# 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

- The content of the course "Food additives" is consistent with what is done in other Universities in the country at Food Engineering profiles
- By acquiring theoretical concepts and practical aspects included in discipline, students acquire substantial knowledge according to the skills required for possible occupations provided in the Grila – RNCIS
- In order to improve and upgate the content of the courses, the professors participate in various online refresher courses.

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the final grade
10.4 Course	The exam is oral. Verification tests are given at the end of each course, and the results of them count toward 20% of the total grade. The logical, accurate, and cohesive application of the learned concepts will be evaluated during assessment of students.	Oral exam	70%

10.5 Seminar				
10.6 Laboratory	The efforts brought by each student to the practical laboratory activity during the semester will be recorded during all scheduled laboratory sessions, and the results are supplemented by the oral report that is presented during the laboratory colloquium by the student (word document + Power Point) and whose topic will be determined at the beginning of the semester.	Laboratory test	30%	
10.7 Project				
10.8 Minimum standard of performance				
Acquisition of acceptable-level scientific knowledge given in classes in addition to practical work.				

Date of completion

Signature of course holder\*\*

Prof. dr. Simona Ioana Vicas, (<u>svicas@uoradea.ro</u>) Signature of seminar laboratory/project holder \*\* Prof. dr. Simona Ioana Vicas, (svicas@uoradea.ro)

Date of approval in the department

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Signature of the Head of Department

Lecturer eng. dr. Adrian Timar

Dean signature

Assoc. Prof. dr. Cristina Maerescu,