DISCIPLINE SHEET

1. Data about the programme

1. Data about the programme	
1.1 Superior educational institution	University of Oradea
1.2 Faculty	Environmental Protection
1.3 Department	Food products engineering
1.4 Domain of study	Food products engineering
1.5 Cycle of study	Master
1.6 Program of study/Qualification	Food safety and security/Engineer

2. Data about the discipline

2.1 Name of the di	iscip	line	Preservation of Food Products by Advanced Tehniques				
2.2 Titular of the c	cours	e	Chief of works, doctor engineer URS MARIANA				
activities							
2.3 Titular of the			Chief of works, doctor engineer URS MARIANA				
seminar/laboratory	/pro	ject	ect				
activities							
2.4 Year of	Ι	2.5 Semest	ster I 2.6 Type of Ex 2.7 Discipline regime		2.7 Discipline regime	Ob	
study			evaluation				

Ob - obligatory/compulsory; As - associated; Op - optional.

3. Total estimated time(number of hours of didactical activities per semester)

4

3.1 Number of hours in a week	3	From which: 3.2	1	3.3	1/1
		course		seminar/laboratory/project	
3.4 Total of hours according to the	42	2 From which: 3.5	14	3.6	14/
educational plan/curriculum		course		seminar/laboratory/project	14
Distribution of the time fund					hou
					rs
Study from the book, course suppo	ort, biblio	ography, notes			15
Extra documentation in the library, on specialised electronic platforms and out on the fields					15
Preparation of seminars/laboratories, themes, reviews, portfolios and essays					14
Tutoring					
Examinations					
Other activities					4
3.7 Total number of hours of 58					
individual study					
3.9 Total number of hours per	100				
semester					

4. Pre conditions (where it is necessary)

3.10 Number of credits

4.1 ofcurriculum	(Conditioning agents) Principles of food preservation
4.2 of competence	

5. Conditions(where it is necessary)

5.1. of course on going	• The students shall not attend the courses, seminars/laboratory classes with their mobile phones turned on. Telephone conversations during
	the room where the course is on going just because they want to talk on the phone, even if they have a personal problem.
	• The students will not be allowed to be late for courses, seminars, laboratories because if they are late that leads to the disturbance of the educational process.

5.2. of seminar/laboratory/project on	•	The dead line for delivering the seminars' worksheets is established
going		by the titular by mutual agreement with the students. The delivery of
		a worksheet can be postponed only on the basis of very objective
		reasons. If, by any circumstances the worksheet is delivered later
		than the previously established dead line, it shall be downgraded 1
		point for each day of delay.

6. Accumulated specific competences
C2.3. Application of principles and basic engineering methods to solve technological problems in
⁴ the agricultural and food related chain.
- ³ C3.5. Issue of projects related to technologies and products specific to the agricultural and food
a g industry
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7. Discipline objectives (from the accumulated grid of specific competences)

7.1 general objective of the discipline				
	 Understanding the modern methods of food preservation 			
	used by students in EU and USA to keep and improved the			
	quality of food.			
	 Tracking changes that occur in products while 			
	preserving products and keeping the quality parameters of			
	food.			
7.2 Specific objectives	• Once the subject has been promoted, the student must			
	have the ability to understand the principles underlying food			
	preservation, the study of modern conservation methods used			
	worldwide, the study of the changes taking place during the			
	technological process in order to obtain quality products, the			
	analysis quality indices of raw material and finished product.			

8. Contents*

8.1 Course	Teaching methods	No. Hours / Observations
1.Biological principles and food preservation processes	Interactive lecture with video projection	1
2.Preservation using a magnetic field	Interactive lecture with video projection	1
3.Preservation using ionizing radiation	Interactive lecture with video projection	1
4.Preservation using ultra-short light impulses	Interactive lecture with video projection	1
5.Preservation using ultraviolet (UV) radiation	Interactive lecture with video projection	1
6.Preservation using ultrasound	Interactive lecture with video projection	1
7.Preservation through heating using microwave radiation	Interactive lecture with video projection	1

8 Preservation through heating using high frequency	Interactive lecture with	1
sound waves	video projection	
sound waves.		
9. Preservation through heating using radio frequency	Interactive lecture with	1
waves.	video projection	
10. Preservation through indirect heating with Joule	Interactive lecture with	1
effect	video projection	
11 Drying as a foodstuff procernation method using	Interactive leature with	1
11.Drying as a foodstuff preservation method using	interactive fecture with	
infra-red radiation.	video projection	
12 Preservation by modified atmosphere packaging	Interactive lecture with	1
12.1 reservation by modified autosphere packaging	video projection	
12 Duranting 1	Interactive lecture with	1
15.Preservation by osmotic desnydration	video projection	
	Interactive lecture with	1
14. The aseptic preservation of foodstuff	video projection	-
8.2 Seminar	Teaching methods	No. of hours/
		Observations
1. Appreciation of the quality of vegetable raw materials.	Practical demonstration	1
	Group work	-
2 Determining the quality of fresh vegetables and fruits by	Practical demonstration	1
2. Determining the quarty of fresh vegetables and fulls by	Crown work	1
	Group work	1
3. Analysis of organoleptic and physico-chemical	Practical demonstration	1
characteristics of apple juice	Group work	
4. Analysis of organoleptic and physico-chemical	Practical demonstration	1
characteristics of fruit nectar	Group work	
5.Refractometric determination of dry matter content of	Practical demonstration	1
vegetables and fruits.	Group work	
6. Determination of acidity and pH of vegetables and fruits	Practical demonstration	I
	Group work	-
7 Determination of vitamin C in fruit juices	Practical demonstration	I
7.Determination of vitamin e in fruit julies	Group work	1
0 Determined in a false level 1 iter of for iter on 1 and a false		1
8. Determination of the number of fruits and vegetables	Practical demonstration	1
	Group work	-
9. Study of the drying process using microwaves	Practical demonstration	1
	Group work	
10.Determination of gelling capacity of fruit marks	Practical demonstration	I
	Group work	
11.Study of defrosting process on juice losses in food	Practical demonstration	Ι
	Group work	
12. Appreciating the quality of spices	Practical demonstration	1
rentprotoning the quality of sprees	Group work	-
13 Packaging used for preserving vegetables and fruits	Practical demonstration	I
15.1 ackaging used for preserving vegetables and fruits.	Group work	1
		1
14. Packaging used for aseptic preservation.	Practical demonstration	
	Group work	
8 1 Project		
8.4 Floject		
1.Motivation of choosing the preserved product type	Display	1
1.Motivation of choosing the preserved product type 2.Description of the preserved product type	Display Display	1 1
1.Motivation of choosing the preserved product type 2.Description of the preserved product type 3.Raw materials used in canning	Display Display Display	1 1 1
1.Motivation of choosing the preserved product type 2.Description of the preserved product type 3.Raw materials used in canning 4.Establishing the quality indices of the raw material	Display Display Display Calculations	1 1 1 1
1.Motivation of choosing the preserved product type 2.Description of the preserved product type 3.Raw materials used in canning 4.Establishing the quality indices of the raw material 5. Auxiliary materials used in conning	Display Display Display Calculations Display	1 1 1 1 1
1.Motivation of choosing the preserved product type 2.Description of the preserved product type 3.Raw materials used in canning 4.Establishing the quality indices of the raw material 5.Auxiliary materials used in canning 6.Technological processe. Ways of processes the	Display Display Display Calculations Display Display	1 1 1 1 1 1

technological process		
7.Preparation of the manufacturing scheme. Materials	Display	1
balance		
8. Calculations for pasteurization and sterilization of	Calculations	1
vegetables		
9.Calculations for pasteurization and sterilization of fruits	Calculations	1
10. Calculation of the need for raw and auxiliary materials	Calculations	1
for the preservation of vegetables and fruits by drying		
11. Establishing the material balance of the products	Calculations	1
preserved with sugar		
12. Establishing the material balance of the products	Calculations	1
preserved by acidification		
13. Establishing the material balance of the products	Calculations	1
preserved by concentration		
14.Presentation and support of the project	Display	1

Bibliografy

- 1. Constantin Banu-Tratat de industrie alimentară, Tehnologii alimentare, Editura ASAB, București, 2009
- 2. Elisabeta Botez Tehnici speciale de procesare, Editura Fundației Universitare "Dunărea de Jos", Galați, 2004
- 3. Brad Segal, Gheorghe Costin, Rodica Segal Metode moderne privind îmbogățirea valorii nutritive a produselor alimentare, Editura Ceres, București,1987
- 4. Brad Segal, Constanța Balint Procedee de îmbunătățire a calității și stabilității produselor alimentare, Editura Tehnică, București, 1982
- 5. Nour Violeta Procesarea industrială a legumelor și fructelor, Editura Sitech, Craiova, 2014
- 6. Petru Niculiță, Mona Popa-Tehnici de conservare a produselor agroalimentare, București 2002
- 7. Romain Jeantet, Thomas Croguennec, Pierre Schuck, Gérard Brulé Science des aliments, Editions TEC&DOC, Paris 2007
- 8. Nicoleta Croitor, Gabriela Lenco- Tehnologia produselor de origine vegetală. Îndrumar de lucrări practice, Editura Fundației Universitare "Dunărea de Jos", Galați, 2006
- 9. I.Jianu, Delia Dumbravă, D.Dronca, T.Trască Principii și tehnici de procesare și conservare a produselor agroalimentare.Determinări. Calcule Tehnologice, Timișoara, 1997
- 10. Rășenescu I.- Aplicații și probleme de tehnologie în industria alimentară, Editura Didactică și Pedagogică, București,1977

11. Urs Mariana – Conservarea prin tehnici avansate a produselor alimentare - Suport de curs

* The content and the number of hours allocated to each course/seminar/laboratory/project shall be mentioned in detail for the period of the 14 weeks of each semester/term of the university year

9. Corroboration of the discipline contents with the expectations of the epistemic community representatives, professional associations and representative employers from the domain afferent to the programme.

- Students shall acquire necessary knowledge related to the principles and methods of conservation applied to the raw vegetal materials in the technological processes of producing food products
 Students, shall, acquire, necessary, skills, to enpresente raw, materials, and to determine, both
- Students shall acquire necessary skills to appreciate raw materials and to determine both qualitatively and quantitatively the obtained finite products

10. Evaluare

Type of activity	10.1 Evaluation criteria	10.2 Assessment	10.3 Share from the
		methods	final grade
10.4 Course	For grade 5 – knowing 50 % of the		
	school matter		70
	For grade 6 – knowing 60% of the		
	school matter		
	For grade 7 – knowing 70% of the		
	school matter		

	For grade 8 – knowing 80% of the		
	school matter		
	For grade 9 – knowing 90% of the		
	school matter		
	For grade 10 – knowing 100% of		
	the school matter (the students shall		
	make proof of having read the		
	presented bibliographical material)		
10.5 Laboratory	For grade 5 – the student answers		20
	correctly to 50% of the questions		
	For grade 6 – the student answers		
	correctly at 60% of the questions		
	For grade 7 – the student answers		
	correctly at 70% of the questions		
	For grade 8 – the student answers		
	correctly at 80% of the questions		
	For grade $9 -$ the student answers		
	correctly at 90% of the questions		
	For grade10 – the student answers		
	correctly at 100% of the questions		
10.7 Project	For grade 5 – the student answers		
5	correctly at 50% of the questions		
	For grade 6 – the student answers	a i	
	correctly at 60% of the questions	Summative	
	For grade 7 – the student answers	assessment/evaluation –	
	correctly 70% of the questions	sustaining and arguing	10
	For grade 8 – the student answers	technical solutions on the	10
	correctly 0% of the questions	basis of the written project	
	For grade 9 – the student answers	evaluation/examination	
	correctly 90% of the questions		
	For grade10 – the student answers		
	correctly 100% of the questions		
10.8 Minimum standard of performance			
Issuing technical projects and technical processes including justification of the methods, procedures and			
operations applied.			

Date of completion

Signature of the course titular**

Signature of the seminar/laboratory/project/ titular**

22.06.2023

Chief of works doctor engineer Urs Mariana mariana_mediu@yahoo.com

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Date of approval in the department

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Chief of works doctor engineer Urs Mariana

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Signature of department manager

Chief of works doctor engineer Timar Adrian Vasile

Dean Signature,

University professor, doctor engineer Maerescu Cristina Maria