UNIVERSITATEA DE ŞTIINŢE AGRICOLE ŞI MEDICINĂ VETERINARĂ CLUJ-NAPOCA
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No._____of _____ **USAMV form 0701040104**

SUBJECT OUTLINE

1. Information on the programme

1.1. Higher education institution	University of Agricultural Sciences and Veterinary Medicine Cluj Napoca
1.2. Faculty	Food Science and Technology
1.3. Department	Food products Engineering
1.4. Field of study	Food products Engineering
1.5.Cycle of study[1]	Bachelor
1.6. Specialization/ Study programme	Technology of Agricultural Products Processing
1.7. Form of education	Full time

2. Information on the discipline

2.1. Name of the discipline	Technology of fruits and vegetables processing							
2.2. Course coordinator				Prof. Phd. Adriana Paucean				
2.3. Seminar/ laboratory/ project coordinator				Lecturer PhD Anamaria Pop				
2.4. Year of study	IV	2.5. Semester	VII	2.6. Type of evaluation	continue	2.7. Discipline status	Content[2]	DS
							Compulsoriness [3]	DI

3. Total estimated time (teaching hours per semester)

3.1. Hours per week – full time programme	4	out of which: 3.2. lecture	2	3.3. seminar/ laboratory/ project	2
3.4. Total number of hours in the curriculum	56	Out of which: 3.5. lecture	28	3.6. seminar/laboratory	28
Distribution of the time allotted					hours
3.4.1. Study based on book, textbook, bibliography and notes					20
3.4.2. Additional documentation in the library, specialized electronic platforms and field					15
3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays					20
3.4.4. Tutorials					5
3.4.5. Examinations					6
3.4.6. Other activities					3
3.7. Total hours of individual study	69				
3.8. Total hours per semester	125				
3.9. Number of credits[4]	5				

4. Prerequisites (is applicable)

4.1. curriculum-related	Raw materials, Biochemistry, Unitary operation in food industry, Food technologies equipment, Microbiology, Food Additives and ingredients
4.2. skills-related	Identification, description and appropriate use of specific concepts for food science and food safety. Engineering processes management.

5. Conditions (if applicable)

5.1. for the lecture	Projector, presentation In the case of the didactic activity carried out online, the teaching methods are adapted.
5.2. for the seminar/ laboratory/ project	Laboratory, raw materials, canned vegetables In the case of the didactic activity carried out online, the teaching methods are adapted.

6. Specific competences acquired

Professional competences	C 1.2 Explanation and interpretation of concepts, processes, models and methods in food science, using basic knowledge of the composition, structure, properties and transformations of food components and their interaction with other systems throughout the agri-food chain C2.3 Application of basic engineering principles and methods for solving technological problems in the agri-food chain
Transversal competences	CT1.Applying strategies of perseverance, rigor, efficiency and responsibility at work, punctuality and accountability for the results of personal activities, creativity, common sense, analytical and critical thinking, solving matters etc, by principles, norms and values of the professional ethics code in food area

7. Course objectives (based on the list of competences acquired)

7.1. Overall course objective	Organise, lead and control the technological process
7.2. Specific objectives	• Characterisation of vegetables and fruits as raw materials • Fresh vegetables valorisation • Vegetables valorisation by using different preservation methods • Canned products characterisation

8. Content

8.1.LECTURE	Teaching methods	Notes
Number of hours – 28		
General terms on fruits and vegetables processing.		1 lecture
Romania's horticulture production	Lecture, explanation,	
Structural features of vegetable cell	heuristic conversation	2 lectures
Packaging materials –selection criteria for canned vegetables		1 lecture 1 lecture
Raw materials preparation for processing		2 lectures
Semi-processed fruits and vegetables technology		2 lectures
Vegetables canning		1 lecture
Preservation by reduction of water content/dehydration		1 lecture
Fruit sugar preserved technology		1 lecture
Fruits juices technologies		1 lecture
Preservation of vegetables by acidification		1 lecture
Special technologies (mustard, soft drinks)		

8.2. PRACTICAL WORK		
Number of hours – 14		
Technological characterization of fruits and vegetables	Explanation, heuristic	1 practical laboratory
Packaging materials analysis for fruits and vegetables preservation	conversation, case study	1 practical laboratory
Preservation Flow chart types		1 practical laboratory
Basic recipes calculations: yield, raw and auxiliary materials specific consumption		2 practical laboratories
Quality parameters control on the technological flow		1 practical laboratory
Exam-test		1 practical laboratory
Technological Projects-14	Individual work	7 practical laboratories
Exam-test		

Compulsory bibliography:

1. *Paucean Adriana, 2011, Tehnologii de procesare a legumelor si fructelor, Ed. Risoprint, Cluj-Napoca*
2. *Paucean Adriana, 2006, Tehnologia prelucrarii legumelor si fructelor- Indrumator de lucrari practice, Ed. Risoprint, Cluj-Napoca*

1. Banu, C., *Manualul inginerului de industrie alimentara,1999,Editura Tehnica, Bucuresti*
2. Tomasian, E., Dima, E., *Tehnologia Conservelor,1969, Editura Didactica si Pedagogica, Bucuresti*

3. Ioancea, I., *Conditionarea si valorificarea superioara a materiilor prime vegetale in scopuri alimentare, 1988, Editura Ceres, Bucuresti*
4. Marinescu, I., *Tehnologii moderne in industria conservelor vegetale, 1976, Editura tehnica, Bucuresti*
5. Mihalca, G., *Congelarea produselor horticole si prepararea lor pentru consum, 1980, Editura Tehnica, Bucuresti*
6. Banu, C., P*rogrese tehnice, tehnologice si stiintifice in industria alimentara, vol, II, 1982,1983, Editura Tehnica, Bucuresti*
7. Segal, B., 1977, T*ehnologia sucurilor limpezi, Indrumari tehnice, Maia*
8. Segal, B., 1982, P*rocedee de imbunatatire a calitatii si stabilitatii produselor alimentare, Editura Tehnica, Bucuresti*
9. Segal, B., 1984, *Utilaj tehnologic in industria prelucrarii produselor horticole,editura ceres, bucuresti*
10. ****Colectie de standarde pentru industria conservelor de legume si fructe, voil I,II,III, Bucuresti, 1989,1991*

9. Corroborating the course content with the expectations of the epistemic community representatives, of the professional associations and of the relevant employers in the corresponding field

Course content is consistent with national professional associations specific applications

10. Assessment

Type of activity	10.1. Assessment criteria	10.2. Assessment methods	10.3. Percentage of the final grade
10.4. Lecture	Identification and characterization of specific fruits and vegetables preservation technologies, specific equipments and quality control parameters	examination test	50% 20%
10.5. Seminar/Laboratory		project	30%
10.6. Minimum performance standards			
Mastering scientific information transmitted through lectures and practical work at an acceptable level Getting the pass mark at the end of testing the laboratory work is the condition of graduation			

[1] Level of study- to be chosen one of the following - Bachelor/Post graduate/Doctoral
[2] Course regime (content) – for bachelor level it will be chosen one of the following - **DF** (fundamental subject), **DD** (subject in the domain), **DS** (specific subject), **DC** (complementary subject).
[3] Course regime (compulsory level) - to be chosen one of the following - **DI** (compulsory subject), **DO** (optional subject), **DFac** (facultative subject)
[4] One ECTS is equivalent with 25 hours of study (didactical and individual study).

Course coordinator
Prof. Phd. Adriana

Laboratory work/seminar coordinator
Lecturer PhD Anamaria Pop

Filled in on
8.09.2021

Paucean

Subject coordinator
Prof. Phd. Adriana

Paucean

Approved by the department on
22.09.2021

Head of the Department
Prof. PhD Sevastita Muste

Dean
Prof. PhD. Elena Mudura

Approved by the Faculty Council on
28.09.2021