UNIVERSITATEA DE ŞTIINŢE AGRICOLE ŞI MEDICINĂ VETERINARĂ CLUJ-NAPOCA
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No._____of _____ **USAMV form 0703030103**

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 Engineering
1.5.Cycle of study[1]	Bachelor
1.6.Specialization/ Study programme	Food Engineering
1.7. Form of education	Full time

2. Information on the discipline

2.1. Name of the discipline	Fruits and vegetables general processing 1							
2.2. Course coordinator				Ass. Prof. Phd. Adriana Paucean				
2.3. Seminar/ laboratory/ project coordinator				Lecturer Phd. Anamaria Pop				
2.4. Year of study	III	2.5. Semester	**V**	2.6. Type of evaluation	sumative	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					15
3.4.2. Additional documentation in the library, specialized electronic platforms and field					13
3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays					10
3.4.4.Tutorials					2
3.4.5.Examinations					4
3.4.6. Other activities					

3.7. Total hours of individual study	44
3.8. Total hours per semester	100
3.9. Number of credits[4]	4

4. Prerequisites (is applicable)

4.1. curriculum-related	Raw matherials, Biochemistry, Unitary operation in food industry, Food technologies equipments
4.2. skills-related	Identification, description and appropiate use of specific concepts for food science and food safety. Engineering processes management.

5. Conditions (if applicable)

5.1. for the lecture	Projector, presentation; The course is interactive, students can ask questions regarding the content of lecture. Academic discipline requires compliance with the start and end of the course. We do not allow any other activities during the lecture,

	mobile phones will be turned off.
5.2. for the seminar/ laboratory/ project	Laboratory, raw materials, canned vegetables. During practical works, each student will develop an individual activity with laboratory materials (made available in the book that describes the laboratory work). Academic discipline is imposed throughout the course of practical works.

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 • Finished products characterisation

8. Content

8.1.LECTURE **Number of hours – 28**	Teaching methods	Notes
General terms on fruits and vegetables processing.		1 lecture
Romania's horticulture production	Lecture, explanation,	
Structural features of vegetable cell	heuristic conversation	2 lectures
Biochemical and biological processes in fruits and vegetables. Technological quality		2 lectures
Fruits and vegetables spoilage. Control possibilities		1 lecture
Fresh storage of fruits and vegetables		1 lecture
Preservation methods		1 lecture
Auxiliary raw materials		1 lecture
Packaging materials –selection criteria for canned vegetables		1 lecture
Packaging technologies		1 lecture
Vegetables and fruits reception. Quality parameters		1 lecture
Raw materials preparation for processing		2 lectures

8.2. PRACTICAL WORK **Number of hours – 28**		
1.General rules for work protection in laboratory	Explanation, heuristic	1 practical laboratory
2.Quality characterization of fruits and vegetables	conversation, case study	1 practical laboratory
3.Vegetables conservation by lactic fermentation (natural acidification)		1 practical laboratory
4.Vegetables conservation by combined natural and artificial acidification		1 practical laboratory 1 practical laboratory
5. Fruits and vegetables conservation by thermal treatments		1 practical laboratory
6. Fruits preservation by sugar addition (gelled products)		1 practical laboratory
7. Fruits preservation by sugar addition (non-gelled products)		1 practical laboratory
8. Mustard technology		
9.Basic recipes calculations: yield, raw and auxiliary materials specific consumption-application for thermal preserved products		1 practical laboratory
10. Basic recipes calculations: yield, raw and auxiliary materials specific consumption-application for thermal preserved products- product preserved by sugar addition		1 practical laboratory

11. Basic recipes calculations: yield, raw and auxiliary materials specific consumption-application for thermal preserved products-natural juices 12. Basic recipes calculations: yield, raw and auxiliary materials specific consumption-application for thermal preserved products-dehydrate products 13. Basic recipes calculations: yield, raw and auxiliary materials specific consumption-application for thermal preserved products- concentrated products 14. Quality parameters control on the technological flow of preserved fruits and vegetables Exam-test		1 practical laboratory 1 practical laboratory 1 practical laboratory 1 practical laboratory

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., C*onditionarea 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	70%
10.5. Seminar/Laboratory		test	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] Cycle of studies- choose of the three options: Bachelor/Master/Ph.D.

[2] Discipline status (content)- for the undergraduate level, choose one of the options:- **FD** (fundamental discipline), **BD** (basic discipline), **CS** (specific disciplines-clinical sciences), **AP** (specific disciplines-animal production), **FH** (specific disciplines-food hygiene), **UO** (disciplines based on the university's options).

[3] Discipline status (compulsoriness)- choose one of the options – **CD** (compulsory discipline) **OD** (optional discipline) **ED** (elective discipline).

[4] One credit is equivalent to 25-30 hours of study (teaching activities and individual study).

Course coordinator
Prof. Phd. Adriana Paucean

Laboratory work/seminar coordinator
Lecturer Phd. Anamaria Pop

Filled in on
8.09.2021

Subject coordinator
Prof. Phd. Adriana Paucean

Approved by the
Department on
22.09.2021

Head of the Department
Prof. Phd Sevastita Muste

Approved by the Faculty
Council on
28.09.2021

Dean
Prof. PhD. Elena Mudura