UNIVERSITATEA DE ŞTIINŢE AGRICOLE ŞI MEDICINĂ VETERINARĂ CLUJ-NAPOCA
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No._____of _____ **USAMV form 0702040106**

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	Food Control and Expertise
1.7. Form of education	Full time

2. Information on the discipline

2.1. Name of the discipline	**Semi-canned and canned technology**							
2.2. Course coordinator				Lecturer PhD Anamaria Pop				
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	summative evaluation	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					10
3.4.2. Additional documentation in the library, specialized electronic platforms and field					5
3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays					10
3.4.4.Tutorials					15
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	Knowledge of Food Biochemistry, Raw Materials in Food Industry, Food Microbiology, Unitary Operations in Food Industry.
4.2. skills-related	Conducting general engineering processes in safe conditions for the user and the environment.

5. Conditions (if applicable)

5.1. for the lecture	The course is interactive; students can ask questions regarding the content of the exposure. Video projector, presentation ppt.
5.2. for the seminar/ laboratory/ project	At the practical works it is obligatory to consult the practical work and to realize the technological scheme or the practical application, each student will be involved in the group activity with the material base and the laboratory materials provided, based on the described way.

6. Specific competences acquired

Professional competences	C2.2. Explain and interpret basic engineering concepts, methods and models in equipment operation issues in the canning industry C3.2. To explain and interpret the principles and methods used in technological processes in the chain of obtaining semi-canned and canned food. C3.3. Monitor and control technological processes in the semi-canned and canned food industry, identify abnormal situations and propose solutions
Transversal competences	CT1 Applying strategies of perseverance, rigor, efficiency and responsibility in work, punctuality and taking responsibility for the results of personal activity, creativity, common sense, analytical and critical thinking, problem solving, etc., based on the principles, norms and values of the code of professional ethics in the food field.

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

7.1. Overall course objective	Organizing and leading the technological process
7.2. Specific objectives	• Characterization of raw materials used in the canning industry. • Valorisation of products by using different preservation methods. • Characterization of finished products • Food diversification. • Understanding and mastering the general technology and the specific one for the manufacture of semi-preserves and preserves (with differentiations according to the group / assortment of semi-preserves / preserves) • Preparation of technological flow and recipes for the manufacture of semi-canned and canned • Monitoring the technological process, including the technological parameters of quality on flow and the quality of the finished products

8. Content

8.1. COURSE	Teaching methods	Notes
General notions regarding the specifics of the semi-canned and canned industry in Romania	Participatory lecture, debate, exemplification	1 lecture
Criteria for choosing packaging specific for semi-preserves and canned food.		1 lecture
Preparation of raw materials for manufacturing		2 lectures
Technology of sterilized cans with high protein content		2 lectures
Plant cell - structure and functions.		1 lecture
Technology of semi-finished products from fruits and vegetables		1 lecture
Technology of sterilized canned fruits and vegetables		1 lecture
Technology of preserved products by reducing humidity		1 lecture
Technology of canned products with sugar		1 lecture
Fruit juice technology		1 lecture
Technology of products preserved by acidification		1 lecture
Special technologies - Mustard technology. Soft drink technology		1 lecture

8.2. PRACTICAL WORK **Number of hours – 14**		
Protection of laboratory work	Documentation sheets	1 lab work (2 hours / work)
Identification of packaging. Preparation of packaging for the manufacture of semi-cans and cans.	experiment	1 lab work (2 hours / work)
Preparation of the technical file of the semi-preserves and cans obtained: • Execution of technological operations for culinary preparation specific to canned goods. • Carrying out and following the process of sterilization, cooling and thermosetting cans. • Description of the products obtained by consulting the quality standards regarding organoleptic and physical-chemical characteristics • Technological calculations in the manufacture of sterilized cans - Applications • Technological calculations in the manufacture of canned food with added sugar - Applications • Technological calculations in the manufacture of fruit and vegetable juices - Applications • Technological calculations for the preservation of vegetables and fruits by drying - Applications • Technological calculations in the manufacture of concentrates - Applications	Observation sheets Worksheets Technology Sheets Technological calculations Practical application Case studies	8 lab work (16 hours / work)
Carrying out the labelling and storage of the cans obtained. Characterization Conventional cans vs Bio cons		2 lab work (4 hours / work)
Determination of net weight and proportion of vegetables or fruits.		1 lab work (1 hours / work)
Verify knowledge		1 lab work (2 hours / work

Required Bibliography:

1. Adriana Paucean, Anamaria Pop, Tehnologii de procesare a legumelor si fructelor, Indrumator de lucrari practice, Editura MEGA, Cluj-Napoca, 2016
2. Paucean Adriana, 2011, Tehnologii de procesare a legumelor si fructelor, Ed. Risoprint, Cluj-Napoca
1. Colectie de standarde pentru industria conservelor, Bucuresti, 1989,1999

Optional Bibliography:

1. M. Shafiur Rahman, 2007, Handbook of Food Preservation, second edition, CRC Press Tailor and Fran
2. Lazăr V., 2006, Tehnologia păstrării şi industrializării produselor horticole, Editura AcademicPres, Cluj Napoca
3. Sălăgean, C. D., Ţibulcă, D., 2009, Tehnologia semiconservelor şi conservelor din carne şi peşte, Editura Risoprint, Cluj-Napoca
4. Aurel Vlaicu, Arad Sălăgean, C. D., 2011, Tehnologia şi controlul calităţii pe fluxul tehnologic de fabricaţie a produselor din carne, Editura Risoprint, Cluj-Napoca
5. Mureşan Claudia, C. Ursachi, 2011 – Principii şi metode de conservare a alimentelor – aplicaţii practice,Editura Universităţi
1. Banu,C., 2009, Tratat de industrie Alimentara, Editura ASAB, vol 2, ISBN 978973-7725-67-7

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

In order to identify ways of modernization and continuous improvement of teaching and course content with the current issues and practical problems teachers participate in conferences, scientific symposia and meetings and fairs which interacts with the private / prospective employer's graduates. The content of the discipline is in accordance with what is practiced in other university centres in the country and abroad.

10. Assessment

Type of activity	10.1. Assessment criteria	10.2. Assessment methods	10.3. Percentage of the final grade
10.4. Lecture	Evaluate the correct answers given to the grid test based on the notions learned	Written Exam	60%

10.5. Seminar/Laboratory	Identification of conservation methods specific to each process. Understanding the effects of preservation on the quality of the product obtained after keeping it fresh or preserved. Conventional can characterization vs Bio cons	Colloquy	40%
10.6. Minimum performance standards			
Description of a technological process specific to obtaining semi-preserves and preserves, including the argumentation of the operations that make up the technological flow and the interpretation of quality parameters. Elaboration of a team solution for the elimination of risk factors in a process of obtaining semi-canned and canned food. Obtaining the passing grade (minimum 5) when verifying the knowledge at the end of the laboratory works is a condition of graduate.			

[1] Education levels- 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).

[5 / *] Disciplines: AK- Advanced knowledge, CT- Complementary Training, S- Synthesis

Filled in on
9.09.2021

Course coordinator
Lecturer PhD Anamaria Pop

Course coordinator
Lecturer PhD Anamaria Pop

Subject coordinator
Prof PhD Muste Sevastița

Approved by the
Department on
22.09.2021

Head of the Department
Prof PhD Muste Sevastița

Approved by the Faculty
Council on
28.09.2021

Dean

Prof PhD. Mudura Elena