UNIVERSITATEA DE ŞTIINŢE AGRICOLE ŞI MEDICINĂ VETERINARĂ CLUJ-NAPOCA
Calea Mănăştur 3-5, 400372, Cluj-Napoca
Tel: 0264-596.384, Fax: 0264-593.792
www.usamvcluj.ro

Nr._____din _____

USAMV form 0702040217

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 Engineering
1.4. Field of study	Food Engineering
1.5.Cycle of study[1]	Level 1. Bachelor
1.6. Specialization/ Study programme	Control and expertise of food products
1.7. Form of education	Regular studies

2. Information on the discipline

2.1. Name of the discipline	**VALORIZATION OF FOOD INDUSTRY BY-PRODUCTS**							
2.2. Course coordinator				**Associate professor PhD. Mirela Jimborean**				
2.3. Seminar/ laboratory/ project coordinator				**Assistant PhD. Delia Michiu**				
2.4. Year of study	IV	2.5. Semester	VIII	2.6. Type of evaluation	Continue	2.7. Discipline status	Content[2]	BD
							Compulsoriness[3]	OD

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					4
3.4.2. Additional documentation in the library, specialized electronic platforms and field					
3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays					
3.4.4. Tutorials					
3.4.5. Examinations					
3.4.6. Other activities					Hours
3.7. Total hours of individual study	4				
3.8. Total hours per semester	60				
3.9. Number of credits[4]	2				

4. Prerequisites (is applicable)

4.1. curriculum-related	Processing Technology of Animal Products, Vegetable Products Processing Technology
4.2. skills-related	Identification, description and appropriate use of specific concepts of food science Understanding the Basics by-products resulting from major food technologies and direction of recovery

5. Conditions (if applicable)

5.1. for the lecture	Video, ppt presentation.
5.2. for the seminar/ laboratory/ project	Pilot Station, raw materials and auxiliary technological schemes

6. Specific competences acquired

Professional competences	C3.1. Description and use of concepts, basic methods and theories regarding the technologies of valorisation of food industry by-products. C3.2. Identify concepts, theories, models and elementary methods regarding the possibility of expanding the production activity in the field of by-products valorization C2.3. To apply principles and scientific methods of packaging and labelling to help solution technological problems in the agro-food chain.
Transversal competences	CT1. Application of strategies of perseverance, rigor, efficiency and responsibility in work, punctuality and assuming responsibility for the results of personal activities, 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 industry.

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

7.1. Overall course objective	Understanding the issues concerning the recovery of by-products resulting technological processes for obtaining food. Studied the chapters help to understand the importance of recovery of by-products chiefly in technological processes. The understanding of the role of the food industry leading technology operations and monitoring process parameters
7.2. Specific objectives	Knowledge of the processes underlying the obtaining of food products Interpretation of technological schemes and description of processing technologies of by-products resulted in the technological process of obtaining food Characterization of finished products Understanding the role and importance of the recovery of by-products from the food industry.

8. Content

8.1. LECTURE **Number of hours**	Teaching methods	Notes
Use of by-products of the dairy industry 1. Use of skimmed milk 2. Casein, caseinogens, co precipitated 3. Use of whey 4. Use of buttermilk 5. Lactose	Lecture, heuristic conversation, explanation	3 lectures = 6 hours
Use of processing by-products of the meat industry 1. Processing heads and bodies. 2. The collection and processing of by-products and pharmaceutical chemical 3. Getting pepsin and rennet. 4. Recovery of blood. 5. Processing Technology intestines. 6. Processing of abattoir waste and condemnations fodder flour. 7. Commodity processing fat. 8. Processing of slaughterhouse by-products	Lecture, heuristic conversation, explanation	3 lectures = 6 hours
Use of by-products of the fish industry 1. Getting medicinal fish oil. 2. Obtaining fish protein hydrolysed. 3. Getting fish flour and oil.	Lecture, heuristic conversation, explanation	1 lecture = 2 hours
Use of by-products of the wine industry.	Lecture, heuristic conversation, explanation	1 lecture = 2 hours

Use of by-products from the brewing and alcohol industry 1. Capitalization yeast 2. The pulp of beer. 3. Recovery products and waste from the manufacture of alcohol		2 lectures = 4 hours
Use of by-products of the sugar industry	Lecture, heuristic conversation, explanation	1 lecture = 2 hours
Use of by-products of the vegetable canning industry 1. Obtaining pectin 2. Production of fruit distillates 3. Getting fruit vinegar 4. Obtaining flavors and natural colors		1 lecture = 2 hours
Use of by-products from other branches of the food industry 1. Use of by-products of milling and bakery industry 2. Use of by-products of the starch industry. 3. Use of by-products of the oil industry	Lecture, heuristic conversation, explanation	1 lecture = 2 hours
Harnessing the hive by-products (wax, royal jelly, propolis, venom, bee bread)	Lecture, heuristic conversation, explanation	1 lecture = 2 hours
8.2. PRACTICAL WORK **Number of hours –**		
Use skimmed milk: getting lacto fruit, obtaining fruit flavoured yogurt	Practical demonstration, observation	2 hours
Use of skimmed milk powder	Practical demonstration, observation	2 hours
Use of whey: getting soft cow cheese	Practical demonstration, observation	4 hours
Use of whey: getting drinks of fermented whey	Practical demonstration, observation	4 hours
Buttermilk use: Getting cheese	Practical demonstration, observation	2 hours
Processing of raw fat materials	Practical demonstration, observation	2 hours
Use organs (liver, tongue).	Practical demonstration, observation	2 hours
Use of by-products of the wine/ beer industry	Practical demonstration, observation	2 hours
Processing by-products of milling industry	Practical demonstration, observation	2 hours
Processing by-products of sugar industry	Practical demonstration, observation	2 hours
Presenting an innovative by- product from the realization of a product obtained from processes in the food industry	Presentation, discussion	4 hours

Compulsory bibliography:

1. Costin, Gh.M., Lungulescu, Gr. 1985, Valorificarea subproduselor din industria laptelui, Ed. tehnică, Bucureşti.
2. Mirela Anamaria Jimborean**,** 2010, Valorificarea subproduselor din industria alimentară, Editura ACADEMICPRES, Cluj-Napoca, ISBN 978-973-744-205-5
3. Jimborean Mirela Anamaria şi Michiu Delia, 2019, Valorificarea subproduselor din industria alimentară, Editura RISOPRINT, Cluj-Napoca, ISBN 978-973-53-2319-6

Optional bibliography:

1. Banu, C. şi colab., 1999, Manualul inginerului de industrie alimentară, Vol. II, Editura Tehnică, Bucuresti.
2. Banu, C şi colab.,1998, Manualul inginerului de industrie alimentară, vol. II, Editura Tehnică, Bucuresti.

3. Jimborean Mirela şi Dorin Ţibulcă, 2006, Tehnologia de fabricare a brânzeturilor, Editura Risoprint, Cluj-Napoca;
4. Ţibulcă, D., Sălăgean, D. 2000, Tehnologia cărnii şi a produselor din carne, Ed. Risoprint, Cluj-Napoca.
5. Ţibulcă, D. şi Jimborean Mirela, 2008, Tehnologia de obţinere a produselor lactate, Editura Risoprint, Cluj-Napoca.

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	Knowledge of the main operations, description and use of basic methods regarding the technologies of valorization of food industry by-products.	Verification	75%
10.5. Seminar/Laboratory	Logical, coherence and correct application of the acquired notions	Prepare a report on how to exploit a by-product of food production	25%
10.6. Minimum performance standards			
Making an individual report on how to valorize a food processing by-product. Obtaining a minimum grade of 5 for practical works is a graduation condition.			

[1] Cycle of studies- choose of the three options: Bachelor/Master/PhD.
[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).

Filled in on
08.09.2021

Course coordinator
Associate professor PhD. Mirela Jimborean

Laboratory work/seminar coordinator
Assistant PhD. Delia Michiu

Subject coordinator
Associate professor PhD. Mirela Jimborean

Approved by
the department
on
22.09.2021

Head of the Department
Professor PhD. Sevastiţa Muste

Approved by
the Faculty
Council on

Dean
Professor PhD. Elena Mudura

28.09.2021