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

No._____of _____ **USAMV–CN-0702030107**

SUBJECT OUTLINE

1. Information on the programme

1.1. Higher education institution	University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca
1.2. Faculty	Faculty of Food Science and Technology
1.3. Department	Food Engineering
1.4. Field of study	Food Engineering
1.5.Education level	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	Vegetal products general technologies 2							
2.2. Course coordinator				Prof. PhD. Elena Mudura				
2.3. Seminar/ laboratory/ project coordinator				Lecturer PhD. Teodora Emilia Coldea				
2.4. Year of study	III	2.5. Semester	V	2.6. Type of evaluation	sumative	2.7. Discipline status	Content[2]	DD
							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					5
3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays					10
3.4.4.Tutorials					5
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	Food biochemistry. Food microbiology.
4.2. skills-related	Food Analysis Techniques

5. Conditions (if applicable)

5.1. for the lecture	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	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	C2.1. - Description and using of concepts, theories and basic methods in the field of processes and exploting of instalations in the agro-food chain C2.2 . – explanation and interpreting of concepts, methods and engineering models in the problems of equipments exploting in the agro-food industry C2.4. – Critical analysis, assessment of characteristics, performances and limits of some technological processes and equipments in the agro-food chain.
Transversal competences	CT2 – Application of interrelationship techniquecs in a team; increasing and perfectioning of empathic communication skills and assumption of specific attibutes when conducting a group activity focusing both conflict solving and time management.

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

7.1. Overall course objective	The knowledge, use and application technologies to obtain and monitor the flow of fermented and distilled alcoholic beverages
7.2. Specific objectives	The knowledge of the process applied to obtain fermented and distilled alcoholic beverages The knowledge of the process control parameters to obtain fermented and distilled alcoholic beverages The use of appropriate methods to assess the quality of fermented products

8. Content

8.1. LECTURE **Number of hours – 28**	Teaching methods Lecture	Notes 1 lecture = 2 hours
1. Brewing technology 1.1 Materials used in the malting and brewing. 1.1.2 Barley used for beer. 1.1.3 Hops used for beer. 1.1.4 Water in malt and brewing industry. 1.1.5 Yeast. 1.1.6 Process adjuvants	Lecture, heuristic conversation, explanation	2 lectures
1.2 Malt obtaining technology. 1.2.1 General description of the process. 1.2.2 Technological flow diagram and quality control	Lecture, heuristic conversation, explanation	2 lectures
1.3 Brewing. 1.3.1 Wort obtaining. 1.3.2 Wort fermentation. 1.3.3. Beer packaging and bottling.	Lecture, heuristic conversation, explanation	3 lectures
2. Wine technology 2.1 White and red wines technology. 2.1.1 White wines technology. 2.1.2 Red wines technology. 2.1.3 Conditioning and bottling	Lecture, heuristic conversation, explanation	3 lectures
2.2 Special wines technology.	Lecture, heuristic conversation,	2 lectures

2.2.1 Champagne wines technology. 2.2.2 Sparkling wines technology. 2.2.3 Liqueured and flavoured wine technology.	explanation	
3. Refined alcohol technology. 3.1 Raw materials used for refined alcohol technology. 3.2 Mash saccharification. 3.3 Mash fermentation 3.4 Mash distillation and raw alcohol rectification.	Lecture, heuristic conversation, explanation	2 lectures

8.2. PRACTICAL WORK **Number of hours – 28**	Theoretical presentation of practical works	1 lab work (2 hours / work)
Control on the malt technology flow chain.	Heuristic conversation, Case Study	1 lab work
Control on the brewing technology flow chain.	Heuristic conversation, Case Study	1 lab work
Control on the wine technology flow chain.	Heuristic conversation, Case Study	1 lab work
Control on the distilled beverages technology flow chain.	Heuristic conversation, Case Study	1 lab work
Technical calculation applied in brewing technology.	Heuristic conversation, Case Study	1 lab work
Technical calculation applied in wine technology.	Heuristic conversation, Case Study	1 lab work
Technical calculation applied in distilled beverages technology.	Heuristic conversation, Case Study	1 lab work

Compulsory bibliography:

1.Mudura, E. 2004. Tehnologii fermentative. Tehnologia berii: Indrumator de lucrări practice . Editura Risoprint, Cluj-Napoca.
2.Elena Mudura, 2012. Controlul calităţii produselor alimentare în industria băuturilor alcoolice. Editura AcademicPres.
3.Elena Mudura, 2013.Tehnologia malţului şi berii. Editura Mega, Cluj Napoca.
4. Banu, C.(coordonator). 2000. Tratat de ştiinţa şi tehnologia malţului şi berii,vol I şi II. Editura Tehnică.Bucureşti.
5.Cotea V. 1985. Tratat de oenologie. Vol I. Vinificaţia şi biochimia vinului. Bucureşti. EdituraCeres
6.Cotea V., Sauciuc I., 1988. Tratat de Oenologie. Vol II Limpezire, stabilizarea şi îmbutelierea vinului.Bucureşti, Editura Ceres
7.Cotea V., Pomohaci, N., Gheorghiţă M.,1982. Oenologie. Bucureşti, Editura didactică şi pedagogică
8.Pomohaci N., Stoian V., Gheorghiţă M., Sîrghi C., Cotea V.V., Nămoloşanu I., 2000. Oenologie. vol. I. Prelucrarea strugurilor şi producerea vinurilor, Editura Ceres, Bucureşti.
9.Pomohaci N., Cotea V.V., Stoian V., Namoloşanu I., Popa A., Sîrghi C., Antoce Arina, 2001. Oenologie. vol. II. Îngrijirea, stabilizarea si îmbutelierea vinurilor. Construcţii si echipamente vinicole.Editura Ceres, Bucureşti.
10. Modoran, D., 2005. Procesarea industrială a alcoolui rafinat, Editura Academicpress, Cluj-Napoca

Optional bibliography:

1.Kunze,W.-Technology brewing and malting,VLB,Berlin,1999
2.Modoran, D.(2002), Tehnologii fermentative, Editura ICPIAF, Cluj-Napoca
3.Aurel I Popa, Ştefan C. Teodorescu- Microbiologia vinului. Bucureşti:, Editura Ceres, 1990
4.Mudura, E. 2014. Calitatea şi inocuitatea berii. Editura Mega, Cluj Napoca
5. Elena Mudura, 2014. Bioprocese fermentative, în Modelarea, simularea şi conducerea avansată a bioproceselor fermentative. Coordonator Anca Sipoş. Editura Universităţii "Lucian Blaga" din Sibiu.

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

It meets the requirements for a qualified training by the high degree of applicability (eg. laboratory work) and topical content of the discipline (identifying and solving quality problems that may interfere with the technology process of fermented and distilled alcoholic beverages).

10. Assessment

Type of activity	10.1. Assessment criteria	10.2. Assessment methods	10.3. Percentage of the final grade

10.4. Lecture	Using the basic knowledge for explanation and interpretation of various types of concepts, circumstances, processes, technology associated projects of fermented and distilled alcoholic beverages	Oral exam (E)	70%
10.5. Seminar/Laboratory	Quality parameters identification and the principles of method knowledge in controlling fermented and distilled alcoholic beverages (in the production process and the final product) The use of laboratory equipment in order to determine the control parameters of fermented and distilled alcoholic beverages	Colloquium (C)	30%
10.6. Minimum performance standards			
Course: Knowledge of the technological scheme for obtaining malt and beer technologies. Characterization of the raw material and the finished product. Description of technological operations, process parameters and equipment for the manufacture of malt and beer. Minimum grade (E): 5. Lab work: Identification and analysis of quality parameters monitored on the technological flow of obtaining malt and beer. Minimum grade (C): 5. Final grade = 70% E + 30% C			

[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
08.09.2021

Course coordinator
Prof. PhD. Elena Mudura

Laboratory work/seminar coordinator
Lecturer PhD. Teodora Emilia Coldea

Subject coordinator
Prof. PhD. Elena Mudura

Approved by the
Department on
22.09.2021

Head of the Department
Prof. PhD. Sevastița Muste

Approved by the Faculty
Council on
28.09.2021

Dean
Prof. PhD. Elena Mudura