UNIVERSITATEA DE ŞTIINŢE AGRICOLE ŞI MEDICINĂ VETERINARĂ CLUJ-NAPOCA
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No._____of _____ **USAMV form 0701020109**

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	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	Technology of agricultural products processing
1.7. Form of education	Full time

2. Information on the discipline

2.1. Name of the discipline	**Vegetable raw materials 2**							
2.2. Course coordinator				Prof.dr. Sevastița Muste				
2.3. Seminar/ laboratory/ project coordinator				Lecturer dr. Andruta Muresan				
2.4. Year of study	II	2.5. Semester	**IV**	2.6. Type of evaluation	summative	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					16
3.4.2. Additional documentation in the library, specialized electronic platforms and field					6
3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays					2
3.4.4. Tutorials					4
3.4.5. Examinations					6
3.4.6. Other activities					
3.7. Total hours of individual study	34				
3.8. Total hours per semester	90				
3.9. Number of credits[4]	3				

4. Prerequisites (is applicable)

4.1. curriculum-related	Food biochemistry, Botany
4.2. skills-related	The student must have knowledge of Biology

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	C1.1. Describe and use basic concepts, theories and methods related to the main physico-chemical characteristics of plant raw materials involved in the food industry C1.3 .Apply basic principles and methods for solving engineering and technological problems, including those related to food safety C2.3. To apply the principles and methods of investigation of vegetable raw materials for solving technological problems in the agri-food chain
Transversal competences	CT3 Application of interrelation techniques within a team; amplifying and refining the empathic capacities of interpersonal communication and assuming specific attributions in carrying out the group activity in order to treat / resolve individual / group conflicts, as well as the optimal time management

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

7.1. Overall course objective	Learning the notions regarding the technology of production, harvesting and capitalization of vegetable raw materials used in the food industry.
7.2. Specific objectives	To understand the importance of horticultural products for the food industry. To recognize the studied vegetable raw materials. To know the factors that influence the quality and productivity of vegetable raw materials.

8. Content

8.1.LECTURE	Teaching methods	Notes
Number of hours – 28		
Definition and structure of horticultural production. Classification	Lecture	1 lecture
Classification of horticultural products. Structure and physico-chemical properties. Chemical composition of horticultural products	Lecture, Heuristic Conversation, Explanation	2 lecture
Vegetable species. **Solanaceae vegetables**. Tomatoes. Peppers. Eggplant	Lecture, Heuristic Conversation, Explanation	1 lecture
Curcubitaceae vegetables. Cucumbers, Common Zucchini, Green and Yellow Watermelon.	Lecture, Heuristic Conversation, Explanation	
Root vegetables. Carrot. Parsley, Celery root, Radish.		1 lecture
Cabbage group vegetables. White cabbage. Red cabbage. Cauliflower.	Lecture, Heuristic Conversation, Explanation	1 lecture
Bulbous vegetables. Onion. Garlic		
Perennial vegetables and seasoning. Rhubarb. Asparagus. Horseradish. Lovage Perennial vegetables and seasoning.	Lecture, Heuristic Conversation, Explanation	1 lecture
Dill, Rosemary. Thyme.		1 lecture
Fruit species. The Apple. The Plum. Apricot. Peach.	Lecture, Heuristic Conversation, Explanation	2 lecture

Cherry. Walnut. Hazelnut. Strawberries. Raspberries and blackberries. The Blueberry Currant. sea buckthorn. **Grapes.** Grape varieties for white wine. Grape varieties for red wine Grape varieties for aromatic wines. **Varieties for grape juice.** Varieties for sparkling wines. Grape varieties for vermouth. Grape varieties for aged distillates	 Lecture, Heuristic Conversation, Explanation Lecture, Heuristic Conversation, Explanation	 1 lecture 1 lecture 1 lecture 1 lecture

8.2. PRACTICAL WORK **Number of hours – 28**		Notes
Work safety and protection in the laboratories of vegetal raw materials. Vegetable seed recognition characters.		1 work lab
Seedling technology. Practical application.		1 work labs
Solanaceae vegetables (Tomatoes, Peppers, Eggplants). Biological features. Variety. Monitoring of Solanaceae seedlings during growth.	Teaching methods Heuristic conversation, experiment, teamwork	1 work lab
Cucurbitaceae vegetables. Biological features. Chemical composition. Varieties and hybrids. Monitoring cucurbitaceae seedlings during growth.		2 work labs
Root vegetables. Biological features. Chemical composition. Variety. Practical application:		1 work lab
Cabbage group vegetables. Biological features. Chemical composition.		1 work lab
Bulbous vegetables. Biological features. Chemical composition. Varieties.		1 work lab
Perennials and spices. Biological features. Chemical composition. Varieties and hybrids.		1work labs
Grapes. Biological features. Grape varieties for wines. Varieties for grape juice. Grape varieties for vermouth. Grape varieties for aged distillates. Practical application.		1work labs
Determination of titratable acidity and determination of pH f the studied vegetable and fruit species.		1 work lab
Presentation of the assortment of fruit species: Apple, Pear, Plum, Apricot, Peach, Cherry. Types of fruits. Characteristics of fruits in the studied fruit species. Chemical composition.		1 work labs
Walnut, Hazelnut, Strawberry, Raspberry and Blackberry. Biological features. Chemical composition		1 work lab

of fruits. Practical application: Evaluation of the degree of ripeness of the fruits by the iodine staining test. Verification of knowledge		1 work labs

Compulsory bibliography:

1. DUDA, M., VÂRBAN, D., MUNTEAN, S., 2003, Lucrari practice Fitotehnie, Editura AcademicPres, Cluj-Napoca;
2. FAZECAS, I., SALONTAI, AL., BÎLTEANU, GH., VASILICA C., 1983, Fitotehnie, Editura.pedadogica, Bucuresti;

Optional bibliography:

1. MUNTEAN, L., S., I., BORCEAN, M., AXENTE, I., ROMAN, V. 2001, Fitotehnie, Editura Ion Ionescu de la Brad.
2. MUSTE, SEVASTITA, 2006, Materii prime vegetale. Editura Rizoprint, Cluj-Napoca;
3. MUNTEAN L., S., 1990, Plante medicinale si aromatice cultivate în România, Editura Dacia Cluj-Napoca.

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

In order to identify ways to modernize and continuously improve the teaching and content of courses, with the latest topics and practical issues, teachers participate in conferences, scientific symposia but also in meetings and international fairs where they interact with the private sector / potential employers graduates. The knowledge taught in the discipline is necessary to understand the technological processes in order to obtain and control the quality of food.

10. Assessment

Type of activity	10.1. Assessment criteria	10.2. Assessment methods	10.3. Percentage of the final grade
10.4. Lecture	Knowing the importance and how to capitalize on horticultural production for the food industry; Factors influencing the quality of horticultural production (vegetable, fruit and grapes species); Knowledge of the physico-chemical properties of vegetable, fruit and grape species);	Oral exam	70%
10.5. Seminar/Laboratory	Acquisition of morphological characteristics for the recognition of varieties of vegetable raw materials obtained from horticultural crops and appreciation of their quality in order to capitalize on the food industry	Colloquy	30%
10.6. Minimum performance standards			
. • Identification of plant raw materials, using precise devices, installations and techniques. • Identifying solutions for maintaining the quality of raw materials during the technological process			

[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 25-30 de hours of study (didactical and individual study).

Course coordinator
Prof. Sevastita Muste, PhD

Laboratory work/seminar coordinator
Lecturer dr. Andruta Muresan

Filled in on
06.09.2021

Subject coordinator
Prof. Sevastita Muste, PhD

Head of the Department
Prof. Sevastita Muste, PhD

Approved by the Department on
22.09.2021

Dean
Prof. Elena Mudura, PhD

Approved by the Faculty Council on
28.09.2021