UNIVERSITATEA DE ŞTIINŢE AGRICOLE ŞI MEDICINĂ VETERINARĂ CLUJ-NAPOCA
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No._____from _____ **Form code USAMV-CN 0703040107**

COURSE DESCRIPTION

1. Information on the program

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. Study field	Food Engineering
1.5. Level field[1)]	Bachelor
1.6. Specialization/ Study Program	Food engineering / IPA
1.7. Teaching Form	Regular studies

2. Information on the discipline

2.1. Name of the course	**Food adulteration and methods for its detection**							
2.2. Course leader				**Lecturer PhD Anca Corina Farcas**				
2.3. Coordinator of seminary/laboratory activity/project				**Lecturer PhD Anca Corina Farcas**				
2.4. Year of study	IV	2.5. Semester	VII	2.6. Type of evaluation	Continuos	2.7. Course regime	Content[2]	DS
							Level of compulsory[3]	DI

3. Total estimated time (teaching hours/semester)

3.1. **Number of hours/week – frequency form**	4	Of which: 3.2. course	2	3.3. seminary/ laboratory/ project	2
3.4. Total hours in the curricula	56	din care: 3.5.curs	28	3.6.seminar/laborator	28
Distribution of time					hours
3.4.1. Study based on handbook, notes, bibliography					6
3.4.2. Extra documentation in the library, on specific electronic platforms and on field					3
3.4.3. Preparation of the seminaries/ laboratories / projecte, themes, papers, portfolies and essays					4
3.4.4. Tutorial					2
3.4.5. Examination					3
3.4.6. Other activities					1
3.7. Total hours individual study	19				
3.8. Total hours per semester	75				
3.9. Number of ECTS[4]	3				

4. Pre-conditions (if applicable)

4.1. of curriculum	Physical and colloidal chemistry, Biochemistry, Food chemistry
4.2. of competences	Identification, description and appropriate use of specific concepts of food science and food safety

5. Condition (if applicable)

5.1. of course development	Projector, ppt presentation
5.2. of seminary/laboratory/ project development	Laboratory with appropriate analytical equipment, glassware, consumables

6. Specific acquired competences

Professional competences	C1.2. Explanation and interpretation of concepts, processes, models and methods in food science, using basic knowledge on the composition, structure, properties and transformations of food components and their interaction with other systems throughout the agri-food chain in order to identify food frauds. 1-3. Application of basic principles and methods in food science to address food authenticity issues, including those related to food safety. C5.1. Identification and application of the principles of legislation and regulations in the food field, in order to strictly observe the principles and regulations in force regarding the authentication of food products.
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. CT3. Efficient use of various learning ways and techniques - training for the acquisition of bibliographic and electronic database information both in Romanian and in an international language, as well as assessing the need and usefulness of extrinsic and intrinsic motivations of continuing education.

7. Subject objectives (as a result of the specific acquired competences)

7.1. Subject general objectives	Rationalizing new trends in authentication of food products and in the analytical techniques used for their analysis
7.2. Specific objectives	The European legislative framework on food authentication Identification of marker compounds used in food authentication (geographical origin, origin botanical species / variety, technology of age) Advanced techniques for analyzing of food composition

8. Contents

8.1.COURSE **Number of hours – 28**	Methods of teaching	Notes (1 lecture = 2 hours)
Defining the terms and establishing the authenticity criteria which define foodstuffs.	Lecture, heuristic conversation, debate, algorithmic, case study, directed observation	1 lecture
European and national legislation concerning authentication of foodstuffs		1 lecture
Authentication of the wine and method for identifying adulteration		2 lectures
Authentication of vinegar and methods for identifying adulteration		1 lecture
Authentication of oils and fats and methods for identifying adulteration		1 lecture
Authentication of coffee and methods for identifying adulteration		1 lecture
Authentication of cocoa beans and products on the basis of cocoa, and methods for identifying adulteration		1 lecture
Authentication of tea and spices and methods for identifying adulteration		1 lecture
Authentication of milk and milk products and methods for identifying adulteration		1 lecture
Authentication of meat and meat products and methods for identifying adulteration		1 lecture
Traceability in the food chain- legislative framework, system implementation		1 lecture
PDO, PGI, TSG products – legislations, criteria		2 lectures

8.2. PRACTICAL WORK **Number of hours – 28**		1 lab work (2 hours / work)
Steps in evaluating the authenticity of a food product. Case Study	Conversation, argumentation, debate	1
Authentication of honey bees. Determination of hydroxymethylfurfural in honey - EC 110/2001	Debate, algorithmic, case study, heuristic conversation	1
Analysis and identification of honey adulterated with		1

substances which corrects consistency. Identification of heat-treated honey	Learning by discovery, debate, case study, conversation, argumentation	
Authentication of extra virgin olive oil - EC Directive 2568/1999		2
Classical and modern methods of essential oils extraction – Extraction of essential oils from various aromatic or medicinal plants (hydrodistillation)		2
Authentication of essential oils from various aromatic or medicinal plants (gas-chromatography)		
Detection of the coffee adulteration – determination of caffeine content		1
Detection of the wine adulterations – identification of synthetic dyes		1
Detection of milk and dairy products adulterations		1
Determination of foodstuffs ages - Dating with ^{14}C. Case study		1
PDO, PGI, TSG products – Case study		2
Knowledge verification.		1

Compulsory Bibliography:

1. Bulancea, M., Răpeanu, G., *Autentificarea şi identificarea falsificărilor produselor alimentare*, 2009, Ed. Didactică şi Pedagogică, Bucureşti.

Facultative Bibliography:

1. Lees, M., Food authenticity and traceability, 2009, CRC Press, Washington, DC
2. Da-Wen Sun (ed.), Moderns Techniques for Food Authentication, 2008, Academic Press
3. Râpeanu, G., Controlul falsificărilor produselor alimentare, 2010, Ed. Didactică şi Pedagogică, Bucureşti

9. Correlations between the subject against the expectations of the epistemic community representatives, of the professional associations and employers' representatives in the domain

Discipline content is in accordance with the applications specific national professional associations
In order to identify ways of modernization and continuous improvement of teaching and course content with the current issues and practical problems, teachers attend the annual meeting of the Association of Food Industry Specialists in Romania, where they meet with specialists from the private sector of food industry and with teachers from other higher education institutions in the country. Meetings aimed identifying the needs and expectations of employers in the field and to coordinate the curricula with similar programs in other higher education institutions.

10. Evaluation

Type of activity	10.1. Evaluation criteria	10.2. Evaluation methods	10.3. Percent of the final grade
10.4. Course	Application logic, consistency and correct concepts complaints Knowledge of criteria used in food authentication	Continuous assessment (Evaluation of the answers given to the topics on the exam)	65%
10.5. Seminary/Laboratory	Ability to perform physico-chemical analyzes and interpreting appropriate the result obtained	1 continuous assessment (Practical assessment of professional skills)	35%
10.6. Minimal standard of performance			
Solving a concrete problem / case study regarding the authentication / falsification of food products including the argumentation of the applied methods, techniques, procedures and / or instruments. Carrying out an individual project by efficiently using relevant and current documentation sources and resources (including internet, databases, online courses, etc.). Obtaining the pass mark at the knowledge verification at the end of the laboratory works is a condition of graduation			

[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).

Filled in on
10.09.2021

Course coordinator
Lecturer PhD Anca Corina Farcas

Laboratory work/seminar coordinator
Lecturer PhD Anca Corina Farcas

Subject coordinator
Lecturer PhD Anca Corina Farcas

Approved by the Department on
22.09.2021

Head of the Department
Prof. dr. Ramona Suharoschi

Approved by the Faculty Council on
28.09.2021

Dean
Prof. dr. Elena Mudura