UNIVERSITATEA DE ŞTIINŢE AGRICOLE ŞI MEDICINĂ VETERINARĂ CLUJ-NAPOCA
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No_____from _____ **Form code USAMV–CN- 0705010108**

SUBJECT OUTLINE

1. Information on the programme

1.1. Higher Education Institution	University of Agricultural Sciences and Veterinary-Medicine Cluj-Nap
1.2. Faculty	Food Science and Technology
1.3. Department	Food Engineering
1.4. Study field	Food Engineering
1.5. Level field[1)]	Master
1.6. Specialization/ Study Program	System processing and food quality control
1.7. Form of education	Full time

2. Information on the discipline

2.1. Name of the course	**Authenticity of food products**							
2.2. Course leader				Associate Prof. Loredana Florina Leopold				
2.3. Coordinator of seminary/laboratory activity/project				Associate Prof. Loredana Florina Leopold				
2.4. Year of study	I	2.5. Semester	II	2.6. Type of evaluation	Exam	2.7. Course regime	Content [2]	DD
							Level of compulsory [3]	DI

3. Total estimated time (teaching hours per semester)

3.1. Number of hours/week – frequency form	2	Out of which : 3.2. course	1	3.3. seminary/ laboratory/ project	1
3.4. Total hours in the curricula	28	Out of which: 3.5.course	14	3.6.seminary/laboratory	14

Distribution of time	Hours
3.4.1.. Study based on handbook, notes, bibliography	30
3.4.2. Extra documentation in the library, on specific electronic platforms and on field	30
3.4.3. Preparation of seminaries/ laboratories/ projects, themes, papers, portfolies and essays	20
3.4.4.Tutorial	7
3.4.5. Examination	10
3.4.6. Other activities	

3.7. Total hours of individual study	97
3.8. Total hours per semester	125
3.9. Number of ECTS[4]	5

4. Prerequisites (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. Conditions (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 competences acquired

Professional competences	C3.1 Description of specific engineering terminology in connection with field-specific multidisciplinary terminology C3.2 Analysis and identification of institutional responsibilities related to agri-food and food production C3.3 Integrated use of concepts and theories related to agri-food and food production in relations with other institutional bodies C3.4 Use of criteria and methods for evaluating agri-food production for expertise, studies, consulting C3.5 Elaboration of interinstitutional projects specific to agri-food production and food certification
Transversal competences	C2.1 Identification and use of scientific research methods in the field of agri-food sciences C2.2 An integrated approach to food science and technology from a social, economic, ethical and cultural point of view C5.2 Explanation and interpretation of methods for evaluating the quality of agri-food products C5.3 Use of specific methodology for evaluation and control of agri-food products C3.4 Use of criteria and methods for evaluating agri-food production for expertise, studies, consulting C4.4 Use of modern statistical data analysis techniques to evaluate results C6.4 Use of modern methods to evaluate the performance / characteristics of the product / process

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

7.1. Subject general objectives	Rationalizing and interpretation of the concepts regardind the authentication of foodstuffs and the advanced analytical techniques used in this area.
7.2. Specific objectives	The fundamental aspects of the biosynthesis and accumulation of bioactive compounds from plants. Recognition and identification of phytochemicals. Metabolomics and metabolic profile. Stages and methods of determining the authenticity of agrifood products.

8. Contents

8.1.COURSE **Number of hours – 14**	Methods of teaching	Observations
Molecular and supramolecular systems from plant and animal tissues- The location of biochemical compounds at the cellular and tissular level; macromolecules type of poly carbohydrate, protein or lipids.	Lecture, heuristic conversation, debate, algorithmic, case study, directed observation.	1 lecture (2 hrs)
Specific compounds of secondary metabolism in plants - volatile compounds, pigments and vitamins.		1 lecture ((2 hrs)
Vegetal metabolomics: the fingerprint of phytochemicals; metabolic profile and her dependence of genetic profile and environmental.		1 lecture (2 hrs)
Markers of authenticity of food products.		4 lecture (8 hrs)

8.2. PRACTICAL WORK **Number of hours – 14**	Methods of teaching	Observations
Spectrometric methods for the evaluation of		1 lecture (2 hrs)

phytochemicals (UV-Vis, IR). IR spectroscopy coupled with chemometric methods for foodstuff (honey, flour) evaluation and authentification. Methods for separation and determination of metabolic profile of the plant (HPLC, TLC) - applications in medicinal and aromatic plant extracts. Determination of the authenticity of some vegetable products (oils, fruit juices, etc.) Knowledge verification.	Conversation, argumentation, debate algorithmic, case study, heuristic conversation, learning by discovery.	2 lecture (4 hrs) 2 lecture (4 hrs) 1 lecture (2 hrs) 1 lecture (2 hrs)
Compulsory Bibliography: 1. Campbell P.N., J.Smith, Illustrated biochemistry, (trad.RO C.Socaciu), 2004, Ed.Academiei Romane 2. Lees, M., Food authenticity and traceability, 2009, CRC Press, Washington, DC 3. D Sun, Modern Techniques for Food Authentication, 2008, Academic Press, Elsevier		
Facultative Bibliography: 1. S.Otles, Methods of analysis of Food components and Additives, 2006, CRC Press 2. 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

Course content is congruent with the applications of professional national specific companies.
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	Logic, correct and coherent application of the concept learned	Exam	50%
10.5. Seminary/Laboratory	Ability to carry out physical and chemical analyzes and to appropriate interpret the result obtained	Colloquium	50%
10.6. Minimal standard of performance			
Mastering scientific information given through lectures and practical work at an acceptable level. Obtaining the pass mark at knowledge verification to the end of the practical work is the 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
Associate Prof. Loredana LEOPOLD

Laboratory work/seminar coordinator
Associate Prof. Loredana LEOPOLD

Subject coordinator
Associate Prof. Loredana LEOPOLD

Approved by the
Department on
22.09.2021

Head of the Department
Prof. Ramona SUHAROSCHI

Approved by the Faculty
Council on
28.09.2021.

Dean
Prof. Dr. Elena Mudura