UNIVERSITATEA DE ŞTIINŢE AGRICOLE ŞI MEDICINĂ VETERINARĂ CLUJ-NAPOCA
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No._____of _____ **USAMV form 0704010210**

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	Post graduate
1.6.Specialization/ Study programme	Food Quality Management
1.7. Form of education	Full time

2. Information on the discipline

2.1. Name of the discipline	**Food Traceability**							
2.2. Course coordinator				Vlad Mureşan, PhD, habil.,Professor				
2.3. Seminar/ laboratory/ project coordinator				Vlad Mureşan, PhD, habil.,Professor				
2.4. Year of study	I	2.5. Semester	**I**	2.6. Type of evaluation	continuous	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	2	out of which: 3.2. lecture	1	3.3. seminar/ laboratory/ project	1
3.4. Total number of hours in the curriculum	28	Out of which: 3.5.lecture	14	3.6.seminar/laboratory	14
Distribution of the time allotted					hours
3.4.1. Study based on book, textbook, bibliography and notes					5
3.4.2. Additional documentation in the library, specialized electronic platforms and field					27
3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays					30
3.4.4. Tutorials					5
3.4.5. Examinations					5
3.4.6. Other activities					
3.7. Total hours of individual study	72				
3.8. Total hours per semester	100				
3.9. Number of credits[4]	4				

4. Prerequisites (is applicable)

4.1. curriculum-related	Raw agrifood materials, organic chemistry, chemistry of food, principles and methods of conservation, agro-food microbiology, Food Storage.
4.2. skills-related	Certificate of linguistic competence (English) Identification, description and appropriate use of specific notions of product quality Food quality management and food safety management systems requirements.

5. Conditions (if applicable)

5.1. for the lecture	Teaching manuals: Didier Montet, Ramesh C. Ray (2017). Food Traceability and Authenticity: Analytical Techniques, 1st Edition. CRC Press Taylor and Francis Group. Course presentation in pptx format: course Holder Prof. dr. Vlad Mureşan Logistic support: video projector, interactive whiteboard and PowerPoint presentations. Participation in a minimum of 50% of courses is a condition for participation in the exam. 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. Location and facilities: Pilot Station lecture room. Classroom equipped with: board, projector and computer.
5.2. for the seminar/ laboratory/ project	1. Teaching manuals: Didier Montet, Ramesh C. Ray (2017). Food Traceability and Authenticity: Analytical Techniques, 1st Edition. CRC Press Taylor and Francis Group. Laboratory/seminar notes:- Place of laboratory: laboratory room 20, place of private partner sector Laboratory equipment: specific glassware, sink, drying oven, balance, Specialized Software used: Power point, Excel, Specific laboratory reagents/supplies : Participation in 100% laboratory/seminar work is a condition for the exam participation 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 − apply regulations related to the manufacture of food and beverages Applies and follows national, international and domestic requirements stated in standards, regulations and other specifications related to food and beverage manufacturing. C3 − apply good manufacturing practices (GMP) Enforces food manufacturing regulations and food safety compliance. Use food safety procedures based on Good Manufacturing Practices (GMP).
Transversal competences	

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

7.1. Overall course objective	Specific Subject which aims to familiarise students with the concepts needed for design and implementation of food traceability systems; Explanation and interpretation of ideas, projects, processes, and theoretical and practical content of the disciplines. Together with the other disciplines in the curriculum, it ensures the implementation and formation of complex concepts on food traceability systems;

7.2. Specific objectives	Learning the conceptual framework and the importance of food traceability systems; Description of methods for tracing of consignments and their link with lots of raw materials; Explain and exemplify the notions; Fostering active participation of master students. Correlation with other courses specific to food industry quality and safety systems, concerning the content of international management standards; Develop procedures for traceability; Preparation of documents / records Obtaining learning outcomes that aim in the formation of skills and abilities based on the correlation of the information received with those acquired in other disciplines such as Raw agrifood materials, organic chemistry, chemistry of food, principles and methods of conservation, agro-food microbiology, Food Storage

8. Content

8.1.LECTURE **Number of hours – 14**	Teaching methods	Notes
1. Importance of traceability in management quality systems and food safety. Principles of Traceability. History of Food Traceability. Food Traceability.	Lecture, explanation, heuristic conversation, debate	1 lecture
2. Legislative regulations on traceability. Food products. Changes in quality during storage and sale of food products. Traceability of organic food.	Lecture, explanation, heuristic conversation, debate	1 lecture
3. Develop documentation and management of traceability system.	Lecture, explanation, heuristic conversation, debate	1 lecture
4. Food traceability in agri-food chain. Structured traceability systems 4.1. Grain traceability systems. 4.2. Oil crops traceability systems. 4.3. Root vegetables traceability systems. 4.4. Traceability Systems for fruits. 4.5. Traceability Systems for vegetables. 4.6. Dairy Traceability 4.7. Meat Traceability 4.8. Egg Traceability Traceability Systems for Apicultural products	Lecture, explanation, heuristic conversation, debate	3 lectures
5. The conceptual framework of withdrawal / recall from the market.	Lecture, explanation, heuristic conversation, debate	1 lecture

8.2. PRACTICAL WORK **Number of hours – 14**	Teaching methods	Notes
1. Development of Methods, Devices, and Sensors for Food Traceability. Alphanumerical and Optical Coding Systems for Food Traceability	Case study, simulation of situations,	1 project

2. Case studies describing methods for tracing the product batches and link them with lots of raw materials. 2.1. Traceability of foodstuffs (wheat - wheat products) 2.2. Traceability of food products (sugar beet-sugar confectionery) 2.3. Traceability of food (oil seed - vegetable oil)	Case study, simulation of situations, methods for team work / individual	3 projects
3. Case study on the preparation of documents / records and highlighting the importance of storage systems	Case study, simulation of situations	1 project
4. Case study - Development of procedures to track, control and establishing documents and records. Control responsibilities.	Case study, simulation of situations	1 project
5. Discussion related to the case studies	Case study, simulation of situations	1 project

Compulsory bibliography:

1. Didier Montet, Ramesh C. Ray (2017). Food Traceability and Authenticity: Analytical Techniques, 1st Edition. CRC Press Taylor and Francis Group.
2. Montserrat Espiñeira, Francisco J. Santaclara (2016). Advances in Food Traceability Techniques and Technologies. Woodhead Publishing
3. Gregory S. Bennet (2009). Food Identity Preservation and Traceability: Safer Grains, 1st Edition. CRC Press Taylor and Francis Group.
4. Stănciuc, N, Rapeanu, G., Stanciu, S. (2011). Trasabilitate. Editura Academică, Galaţi.
5. Regulamentul (CE) nr. 178/2002 al Parlamentului European şi al Consiliului din 28 ianuarie 2002 de stabilire a principiilor şi a cerinţelor generale ale legislaţiei alimentare, de instituire a Autorităţii Europene pentru Siguranţa Alimentară şi de stabilire a procedurilor în domeniul siguranţei produselor alimentare.

Optional bibliography:

1. SR EN ISO 22005-2007: Trasabilitatea în lanţul alimentar. Principii generale şi cerinţe fundamentale pentru proiectarea şi implementarea sistemului.
2. SR ISO 9001-2008, Sisteme de management al calităţii. Cerinţe. SR EN ISO 9000-2006 Sisteme de management a calităţii. Principii fundamentale şi vocabular

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

The course has a similar content compared with other European universities courses and takes into account the level of preparation of students.
The course is important / fundamental for the development of working skills as future specialists in the graduated field
The content of the discipline is in line with the demands of the specific national professional associations.
In order to identify ways of modernization and continuous improvement of the teaching and content of the courses, with the most current themes and practical problems, the teachers participate at the annual meeting of the Association of Food Industry Specialists in Romania, where they meet with the food industry specialists from the private environment and the teaching staff from other higher education institutions in the country. Meetings aim at identifying the needs and expectations of employers in the field and coordinating with other similar programs within other higher education institutions.

10. Assessment

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

10.4. Lecture	General and particular aspects of food traceability	Continuous assessment	50%
10.5. Seminar/Laboratory	Developing and presenting a case study based on predetermined topics.	Presentation and submission of individual projects	50%

10.6. Minimum performance standards

Knowledge 50% of the information contained in the course.
Knowledge 50% of the information provided at practical work / seminar.
100% attendance at practical work / seminars is mandatory.
Knowing the Principles of Food Traceability, as well as realizing an individual Food Traceability specific project. The assessment of the knowledge and skills acquired by students is carried out in accordance with Article 144 (3) of the National Education Law, by full notes from 10 to 1, note 5 certifying the achievement of the minimum competences related to the discipline and passing the examination.
Final Grade: = 50%CA+50%P

[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 de hours of study (didactical and individual study).

Filled in on 06.09.2024	Course coordinator Vlad Mureșan, PhD, habil., Professor	Laboratory work/seminar coordinator Vlad Mureșan, PhD, habil., Professor
	Subject coordinator Vlad Mureșan, PhD, habil., Professor	
Approved by the Department on 12.09.2024	Head of the Department Simona Man, Assoc. Professor	
Approved by the Faculty Council on 27.09.2024	Dean Elena Mudura, PhD Professor	