Nr._____din _____ **Formular USAMV 0701010107**

SUBJECT OUTLINE

1. General program

1.1. Higher education institution	University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca
1.2. Faculty	Food Sciences and Technologies
1.3. Department	Food Sciences
1.4. Field of studies	Food Engineering
1.5. Level of study[1)]	Bachelor of Science
1.6.Specialization	Technology of agricultural products processing
1.7. Form of education	IF

2. Course characteristics

2.1. Name of the course	Organic chemistry							
2.2. Course coordinator				Prof.dr. Andreea Stănilă				
2.3. Coordinator of the laboratory/seminar activity				Assist.prof. dr. Cristina Coman				
2.4. Year of study	I	2.5. Semester	**1I**	2.6. Type of evaluation	Summative	2.7. Course regime	Content[2]	DF
							Compulsory level[3]	DI

3. Total estimated time (hours/semester for the teaching activities)

3.1 Number of hours/week– full time form	4	out of which: 3.2. course	2	3.3. seminar/ laboratory/ project	2
3.4. Total hours in the teaching curricula	56	out of which: 3.5.curs	28	3.6. seminar/laboratory	28

Distribution of time	hrs
3.4.1. Study based on hand book, notes, bibliography	20
3.4.2. Extra documentation in library, on specific electronic platforms and on field	5
3.4.3. Preparation of seminars / laboratories / projects, essays, reports, portfolios	5
3.4.4. Tutorial	10
3.4.5. Examination	4
3.4.6. Other activities	

3.7. Total hours of individual study	44
3.8. Total hours on semester	100
3.9. Number of credits [4]	4

4. Pre-conditions (where relevant)

4.1. for curriculum	General chemistry
4.2. for competences	The student must have knowledge regarding general chemisty and organic chemistry from highschool

5. Conditions (where relevant)

5.1. for course	The course is interactive, the students can adress questions regarding the course content. Academic discipline enforce the compliance within the beginning and the end of the course. Any other activities are forbiden during course, the cell phones are strictly forbiden.
5.2. for seminar/laboratory/project	In the laboratory students must consult the practical guide, every student will perform individual activity using the laboratory equipment which is described in

	the practical guide. During the practical activities the academic discipline must be maintainted.

6. Specific competences acquired

Professional competences	-Description and use of concepts, theories and basic methods used in quality control of food products; the concepts are refering to the chemical compounds that assure the product quality, their transformation during processing, transportation and storage, the equipment and the quantification methods used for determining these compounds -Description and use of concepts, theories and methods of basic food science (defined in multidisciplinary terms), on the structure, properties and transformations of food compounds and contaminants throughout the food chain -Explanation and interpretation of concepts, processes, models and methods of food science, using basic knowledge on the composition, structure, properties and transformations of food compounds and their interaction with other systems throughout the food chain
Transversal competences	- Applying strategies like perseverance, rigor, efficiency and responsibility in work, punctuality and personal assumption of responsibility for business results, creativity, common sense, analytical and critical thinking, problem solving and so on, based on principles, norms and code values applied for ethics in food. - Applying networking techniques within a team; amplification and shaping of empathic capacities of interpersonal communication and ownership of specific tasks in this activity group for treatment / conflict solving individual / group, and optimal management of time.

7. Objectives of the course (as a result of the specific competences acquired)

7.1. . General objectives	Assimilation of fundamental concepts of organic chemistry required for engineers in the food industry in order to understand and learn other disciplines (biochemistry, nutrition, toxicology, food control, etc.); knowledge of organic compounds involved in the proper functioning of plant and animal organisms.
7.2. Specific objectives	The study of organic chemistry is necessary for arming students with the knowledge and practical skills on the handling of laboratory tools, identification or determination of chemical compounds based on its content.

8. Content

8.1. COURSE **Number of hours – 28**	Teaching methods	Observation
1. **Introduction in organic chemistry**; 1.1.Fundamental chemistry 1.2.Izolation and purification of organic substances; 1.3.Compozition of organic substances	Lectures	1 Lecture
2. **Structure of organic substances**; 2.1. Chemical bonds in organic chemistry; 2.2.Raw and molecular formulas; 2.3. Types of isomers of organic compounds	Lectures	1 Lecture
3. **Electronic effects in organic molecules**;3.1. Inductive effect; 3.2. Electromer effect and electron conjugations; 3.3. Reactivity - types of chemical reactions in organic chemistry;	Lectures	1 Lecture
4. Hydrocarbons; 4.1.General characterisation; 4.2. Alkane: definition, nomenclature, structure, physical properties and chemical representatives	Lectures	1 Lecture
5. **Alkenes**; 5.1. Definition, nomenclature, structure, physical properties and chemical representatives;	Lecture	3 Lecture
5.2. **Alkyne**. Definition, nomenclature, structure, physical and chemical properties, representatives. 5.3. Aromatic hydrocarbons, Definition, nomenclature, structure, physical and chemical properties, representatives	Lectures	1 Lecture
6. **Organic compounds with simple functions** 6.1. General characterization, classification,	Lectures	1 Lecture
6.2.Halogenated compounds: Definition, nomenclature, structure, physical properties and chemical representatives.	Lectures	2 Lecture
7. **Hydroxylated compounds: alcohols and phenols**; 7.1. Alcohols: Definition, nomenclature, structure, physical properties and chemical representatives. 7.2. Phenols: Definition, nomenclature, structure, physical and chemical properties, representatives	Lectures	1 Lecture
8. **Carbonyl compounds**: 8.1. Aldehydes and ketones: Definition, nomenclature, structure, physical and chemical properties, representatives	Lectures	1 Lecture
9. **Amines .**9.1. Definition, nomenclature, structure, physical and chemical properties, representatives	Lectures	1 Lecture
10. Compounds of the carboxylic acid 10.1. Definition, nomenclature, structure, physical properties and chemical representatives; 10.2. Functional derivatives of carboxylic acids: esters;	Lectures	1 Lecture
11. Food dyes		

8.2. PRACTICAL WORK **Number of hours – 28**		
1. Protection measures in laboratory	Practical work	1 practical work
2. Methods for purification of the components of a mixture: sublimation, recrystallization, distillation, extraction, steam distillation of water	Practical work	2 practical work
3. Methods of separating components of a mixture: filtration, centrifugation, extraction.	Practical work	2 practical work
4. Methods of separating components of a mixture. Thin layer chromatography.	Practical work	2 practical work
5. The structure of organic compounds; isomers; Determination of chemical formulas.	Seminar	2 practical work
6. .Characteristic reactions of classes of organic compounds: esterification reactions.	Practical work	2 practical work
7. Seminar: Computational stoichiometric and types of chemical reactions in organic chemistry.	Seminar	2 practical work
8. Laboratory Colloquium	Examination	1 practical work

Compulsory bibliography

1.Andreea Stanila - Notiui fundamentale de chimie generala si organica, Ed.Risoprint,2012
2) Dana Irinca, Andreea Stănilă – „Chimie organică: îndrumător de lucrări practice" Ed.Roprint, Cluj-Napoca, 2003

Facultative bibliography:

*1) Margareta Avram -**"Chimie organică"** , vol I şi II, ediţia a-II-a, Ed.Did. şi Ped., Buc.1996*
*2) C.Neniţescu –**"Chimie organică"** , Ed.Did. şi Ped., Bucureşti, 1974*

9. Corroboration of the subject content with the expectations of the epistemic community representatives, of the professional associations and representative employers in the domain

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 Specialists in Food Industry of Romania as well as business meetings with members of food industry.

10. Evaluation

Type of activity	10.1. Evaluation criteria	10.2. Evaluation methods	10.3. Percent of the final grade
10.4. Course	Identify the main classes of organic compounds. Knowledge of organic chemical reactions, identification of mechanisms reaction. Knowing the properties of classes of organic compounds found in the food industry	Oral Exam	75%
10.5. Seminar/Laboratory	Theoretical and practical knowledge of the methods of analysis used in the chemistry lab.	periodic evaluation / colloquy	25%
10.6. Minimal standard of performance			
Mastering scientific information conveyed through lectures and practical work at an acceptable level. Obtaining the pass mark in continuous assessment 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
7.09.2021

Course coordinator
Prof. dr. Andreea Stănilă

Laboratory work/seminar coordinator
Assist. Prof. dr. Cristina Coman

Subject coordinator
Prof. dr. Andreea Stănilă

Approved by the
Department on
22.09.2021

Head of the Department
Prof. Ramona Suharoschi, PhD

Approved by the Faculty
Council on
28.09.2021

Dean
Prof. Elena Mudura, PhD