UNIVERSITATEA DE ŞTIINŢE AGRICOLE ŞI MEDICINĂ VETERINARĂ CLUJ-NAPOCA
Facultatea de Agricultură
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No._____of _____ **USAMV form 0107010109**

SUBJECT OUTLINE

1. Information on the programme

1.1. Higher education institution	University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca
1.2. Faculty	Agriculture
1.3. Department	Department of Environmental and Plant Protection
1.4. Field of study	Environmental Engineering
1.5. Cycle of study1	Bachelor o
1.6. Specialization/ Study programme	Environmental Engineering
1.7. Form of education	Full time

2. Course characteristics

2.1. Discipline name	**CHEMISTRY 2**							
2.2. Course coordinator				Prof.PhD. Francisc V. DULF				
2.3. Seminar/ laboratory/ project coordinator				Prof.PhD. Francisc V. DULF				
2.4. Year of study	I	2.5. Semester	II	2.6. Evaluation type	Summative	2.7. Discipline status	Content[2]	DF
							Compulsory level[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 books, textbooks, bibliography and notes					22
3.4.2. Additional documentation in the library, electronic platforms and field experiences					8
3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays					10
3.4.4. Tutorials					4
3.4.5. Examinations					4
3.4.6. Other activities					

3.7. Total hours of individual study	48
3.8. Total hours on semester	104
3.9. Number of credits [4]	4

4. Prerequisites (if applicable)

4.1. curriculum-related	General chemistry
4.2. skills-related	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. Cumulated specific competences

Professional competences	-Description and use of concepts, theories and basic methods used in quality control of vegetable 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 organic 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. Discipline objectives (based on the cumulated specific competences)

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
Introduction in organic chemistry; Compozition of organic substances; **Structure of organic substances**: Chemical bonds in organic chemistry;	Lectures	1 lecture = 2 hours
Types of isomers of organic compounds	Lectures	1 Lecture
Hydrocarbons; General characterisation; **Alkane:** definition, nomenclature, structure, physical properties and chemical representatives	Lectures	1 Lecture
Alkenes; Definition, nomenclature, structure, physical properties and chemical representatives;	Lectures	1 Lecture
Alkyne. Definition, nomenclature, structure, physical and chemical properties, representatives.	Lecture	1Lecture
Aromatic hydrocarbons, Definition, nomenclature, structure, physical and chemical properties, representatives	Lectures	1 Lecture
Organic compounds with simple functions General characterization, classification, Halogenated compounds: Definition, nomenclature, structure, physical properties and chemical representatives.	Lectures	1 Lecture
Hydroxylated compounds: alcohols and phenols; Alcohols: Definition, nomenclature, structure, physical properties and chemical representatives. Phenols: Definition, nomenclature, structure, physical and chemical properties, representatives	Lectures	1 Lecture
Carbonyl compounds:Aldehydes and ketones: Definition, nomenclature, structure, physical and chemical properties, representatives	Lectures	1 Lecture
Amines. Definition, nomenclature, structure, physical and chemical properties, representatives	Lectures	1 Lecture
Carboxylic acids Definition, nomenclature, structure, physical properties and chemical representatives;	Lectures	1 Lecture
Functional derivatives of carboxylic acids	Lectures	1 Lecture
Natural compounds: carbohydrates; lipids; amino acids	Lectures	2 Lectures

8.2. PRACTICAL WORKS Number of hours – 28	Teaching methods	Observation
Laboratory safety rules. Laboratory glassware and apparatus. Laboratory operation.	Practical work	1 lab work (2 hours/work)
Separation/purification of Mixtures Using Different Techniques: sublimation, recrystallization, distillation, extraction, filtration, centrifugation, extraction. Separation by chromatographic methods	Practical work	3 lab works
Saturated and unsaturated hydrocarbons. Nomenclature and isomers. Exercises.	Practical work	1 lab work
Reactions of Alkenes	Practical work	1 lab work
Identification of aromatic compounds	Practical work	1 lab work
Reactions of alcohols/phenols	Practical work	1 lab work
General reactions of carbonyl compounds (Oxidation reactions: with Tollens and Fehling reagents)	Practical work	1 lab work
Specific reactions of carboxylic acids.	Practical work	1 lab work
Specific reactions of biologically active compounds: carbohydrates, lipids, amino acids.	Practical work	3 lab works
Knowledge checks	Examination	2 h

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 și II, ediția a-II-a, Ed.Did. și Ped., Buc.1996

2) C.Nenițescu –"Chimie organică", Ed.Did. și Ped., București, 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 organiccompounds. Knowledge of organic chemical reactions, identification of mechanisms reaction. Knowing the properties of classes of organic compounds found in the food industry	summative(E)	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. Minimum performance standards			
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] Cycle of studies - choose one of the three options: Bachelor/Master/Ph.D.

[2] according to the educational plan

[3] Discipline status (compulsoriness)- choose one of the options–**DI** (compulsory discipline) **DO**(optional discipline) **Dfac**(facultative discipline).

[4] One credit is equivalent to 25-30 hours of study (teaching activities and individual study).

Filled in on
04.09.2019

Course coordinator
Prof.PhD. Francisc V. DULF

Laboratory work/seminar coordinator
Prof.PhD. Francisc V. DULF

Approved by the department on
05.09. 2019

Head of the Department
Prof. Univ. Dr. Ing. IOAN OROIAN