No._____of _____ **USAMV form 0701030217**

SUBJECT OUTLINE

1. Information on the programme

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. Field of study	**Food Engineering**
1.5.Cycle of study[1]	**Bachelor**
1.6.Specialization/ Study programme	**Technology of Agricultural Products Processing (TPPA)**
1.7. Form of education	**Full time**

2. Information on the discipline

2.1. Name of the discipline	**Design elements in the food industry**							
2.2. Course coordinator	-							
2.3. Seminar/ laboratory/ project coordinator	**Vlad Mureşan, PhD, habil., Associate Professor**							
2.4. Year of study	**III**	2.5. Semester	**V**	2.6. Type of evaluation	summative	2.7. Discipline status	Content[2]	DD
							Compulsoriness[3]	DO

3. Total estimated time (teaching hours per semester)

3.1. Hours per week – full time programme	2	out of which: 3.2. lecture	0	3.3. seminar/ laboratory/ project	2
3.4.Total number of hours in the curriculum	28	Out of which: 3.5.lecture	0	3.6.seminar/laboratory	28
Distribution of the time allotted					hours
3.4.1. Study based on book, textbook, bibliography and notes					8
3.4.2. Additional documentation in the library, specialized electronic platforms and field					4
3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays					5
3.4.4.Tutorials					2
3.4.5.Examinations					3
3.4.6. Other activities					

3.7. Total hours of individual study	22
3.8. Total hours per semester	50
3.9. Number of credits[4]	2

4. Prerequisites (if applicable)

4.1. curriculum-related	Descriptive geometry and technical drawing; Operations and apparatus in the food industry; Machinery in the food industry; Transfer phenomena; Food chemistry; Applied computer science and computer aided graphics..
4.2. skills-related	The student should have knowledge of Food Industry unit operations and machines, as well as knowing the schemes and the principle of operation of the food industry equipment.

5. Conditions (if applicable)

5.1. for the lecture	-
5.2. for the seminar/ laboratory/ project	For practical works each student will carry out an application / technological computation / chemical analysis specific to Sugar technology. Academic discipline is imposed for the duration of works. Specially designed laboratory (equipped with specific glassware, oven, balance, refractometer, polarimeter); Confectionery Pilot Plant.

6. Specific competences acquired

Professional competences	C3.2. Explaining and interpreting the principles and methods used in technological processes in the food chain 2-3. Application of basic engineering principles and methods for solving technological problems in the agri-food chain C3.5. Elaboration of projects related to technologies and products specific to the agri-food industry
Transversal competences	CT1 Apply strategies for perseverance, rigor , efficiency and responsibility in work , punctuality and personal accountability for its performance , creativity, common sense, analytical and critical thinking , problem solving, etc., based on principles, norms and values code of professional ethics from food industry;

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

7.1. Overall course objective	To acquire the knowledge concerning the raw materials, production technologies, equipment and facilities involved in sugar production (beet derived).
7.2. Specific objectives	Knowledge of quality parameters of sugar beet and sugar finished product; Knowledge of operations and operating principles of the equipment from sugar factory; Using and understanding the methods, analysis techniques, applications and technological computations from extraction technology (sugar) field; Interpretation of results obtained by analysing the raw materials, intermediate and finished products from sugar industry. Use and understanding of methods, analysis techniques, applications and technological calculations in the field of food technologies; Tabular and graphical representation of the balance of materials using computer applications.

8. Content

8.1.LECTURE **Number of hours – 0**	Teaching methods	Notes

8.2. PRACTICAL WORK **Number of hours – 28**		
1. The importance of design in the training of future technological engineers in the food industry. The role of projects in the action of integrating education with research, production and the consumer.	Debate, questioning, explanation	1 Practical works
2. Design of food products and processes. The concept of product and food process - development strategies. Elements of elaboration of an experimental protocol. Computer applications.	Debate, questioning, explanation	1 Practical work
3. The stages of elaboration of a project. Theoretical and practical documentation. Sources of scientific documentation. Industrial and intellectual property objectives. Electronic databases for patents and trademarks	Experiment, conversation, explanation	1 Practical work

4. Establishing the study topics for Theme 1 of the Portfolio. Search, analysis and selection of relevant bibliographic material.	Experiment, conversation, explanation	1 Practical work
5. Studying and organizing bibliographic material. Study of a scientific article or patent specific to the food industry - Theme 1 of the Portfolio: Summary and citation.	Experiment, conversation, explanation	1 Practical work
6. The elaboration plan of a project. Project structure, content and wording. Use of specific computer applications. Project review. Presentation methods and applications. Project support methodology.	Experiment, conversation, explanation	2 Practical works
7. Systematization of technology. Technological schemes of operations. Symbols and schemes of technological flow. The development of the technological flow in space.	Debate, questioning, explanation	1 Practical work
8. Computer applications for the realization of technological flow schemes - Theme 2 of the Portfolio: Realization of a technological flow scheme specific to the food industry	Debate, questioning, explanation	2 Practical work
9. Technological sizing of installations. Capacity of installations. Determining the number of machines. Device productivity.	Debate, questioning, explanation	1 Practical work
10. Material balance. Computing technology applications specific to food technologies. Theme 3 of the Portfolio: Tabular and graphical representation of the balance of materials using computer applications.	Debate, questioning, explanation	3 Practical work

Compulsory bibliography:

1. Racolța E., *Tehnologia Zahărului*, Editura AcademicPres, Cluj-Napoca, 2013.
2. Adriana -Paula David, Emil Racolta, "Utilajul si tehnologia de obtinere a zaharului", Ed. Risoprint, Cluj-Napoca 2010;
3. Racolța Emil, Marta Hodrea, Teodora Şchiop, "*Îndrumător de lucrări practice pentru produse zaharoase"*, Ed.Risoprint, 2008;
4. Racolţa Emil, *"Tehnologii generale în industria alimentară*", " *Aplicatii si calcule tehnologi*ce" Ed.Risoprint, 2007;
5. Racolţa Emil, *"Tehnologii generale în industria alimentară*", Ed.Risoprint, 2007;
6. Dominica Culache, Vasile Platon, "*Tehnologia zahărului*", Ed. Tehnică, Bucureşti, 1987;
7. Luca Gh., "*Probleme de operaţii şi utilaje în industria alimentară*", Ed. Tehnică,Bucureşti, 1978;
8. Bocioagă V., *Îndrumător pentru controlul tehnic şi de calitate în industria zahărului;*

Optional bibliography:

1. Racolţa Emil, 2007. *"Tehnologii generale în industria alimentară - Aplicatii si calcule tehnologi*ce" Ed.Risoprint, Cluj Napoca;
2. Modoran Dorel, Modoran C., Ţibulcă D., 2003. "Îndrumător de proiectare în industria alimentară", Ed. AcademicPres, Cluj Napoca.
3. Alexe Petru, Stoica M, 2016. Elemente de proiectare a produselor alimentare noi, Ed. Univ. Dunărea de Jos, Galaţi.
4. Racolţa Emil, 2007. *"Tehnologii generale în industria alimentară*", Ed.Risoprint, Cluj Napoca.

Bibliografie Facultativă:

Banu C. 2002. "*Manualul inginerului de industria alimentara*", Ed. Tehnica Bucuresti.
Luca Gh., 1978. "*Probleme de operaţii şi utilaje în industria alimentară*", Ed. Tehnică,Bucureşti.

9. Corroborating the course content with the expectations of the epistemic community representatives, of the professional associations and of the relevant employers in the corresponding field

The content of the discipline is in accordance with the requests of specific national professional associations; teachers regularly participate in national and / or international fairs, workshops, symposia and congresses in the field of the food industry and undertake visits to specific production units

10. Assessment

Type of activity	10.1. Assessment criteria	10.2. Assessment methods	10.3. Percentage of the final grade
10.4. Lecture	-	-	-
10.5. Seminar/Laboratory	Acquired skills, involvement and interest in completing homework	Presentation / Support	10%
	Portfolio Theme 1: Summary and citation filing / Search, analysis and selection of relevant bibliographic material.	Presentation / Support	30%
	Theme 2 of the Portfolio: Realization of a technological flow scheme specific to the food industry.	Presentation / Support	30%
	Theme 3 of the Portfolio: Tabular and graphical representation of the materials balance using computer applications	Presentation / Support	30%
10.6. Minimum performance standards			
Timely delivery of topics from the project portfolio.			

[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
07.09.2021

Course coordinator

Laboratory work/seminar coordinator
Vlad Mureșan, PhD, habil., Associate Professor

Subject coordinator
Vlad Mureșan, PhD, habil., Associate Professor

Approved by the Department on
22.09.2021

Head of the Department
Sevastița Muste, PhD, habil., Professor

Approved by the Faculty Council on
28.09.2021

Dean
Elena Mudura, PhD, habil., Professor