UNIVERSITATEA DE ŞTIINŢE AGRICOLE ŞI MEDICINĂ VETERINARĂ CLUJ-NAPOCA
Calea Mănăştur 3-5, 400372, Cluj-Napoca
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No._____of _____ **USAMV form 0703030104**

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	**Food Engineering**
1.7. Form of education	**Full time**

2. Information on the discipline

2.1. Name of the discipline	Cereal milling							
2.2. Course coordinator	Associate professor, PhD. Simona Maria Man							
2.3. Seminar/ laboratory/ project coordinator	Associate professor, PhD. Simona Maria Man							
2.4. Year of study	III	2.5. Semester	V	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	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 book, textbook, bibliography and notes					15
3.4.2. Additional documentation in the library, specialized electronic platforms and field					10
3.4.3. Preparing seminars/ laboratories/ projects, subjects, reports, portfolios and essays					10
3.4.4. Tutorials					3
3.4.5. Examinations					6
3.4.6. Other activities					
3.7. Total hours of individual study	44				
3.8. Total hours per semester	100				
3.9. Number of credits[4]	4				

4. Prerequisites (is applicable)

4.1. curriculum-related	Descriptive Geometry, Transfer phenomena, operation in food industry, Food technologies equipments,
4.2. skills-related	Identification, description and appropriate use of specific concepts of operations and equipment in the food industry; Students must have knowledge of systematic and anatomical structure of grain, grain properties (physical and special).

5. Conditions (if applicable)

5.1. for the lecture	Classroom equipped with projection system; The course is interactive, students can ask questions on the content of the statement.

	In the case of the didactic activity carried out online, the teaching methods are adapted.
5.2. for the seminar/ laboratory/ project	At practical work the students will perform activities with laboratory materials available. In the hours of project is compulsory consultation teaching materials, each student will have an individual design task being made available to the project theme and structure stages are described teaching materials. Academic discipline is imposed for the duration of works / project In the case of the didactic activity carried out online, the teaching methods are adapted.

6. Specific competences acquired

Professional competences	C3.2. Explanation and interpretation of the principles and methods used in technological processes in the milling industry C2.3. Application of basic engineering principles and methods for solving technological problems in the milling industry C2.4. Critical analysis, evaluation of the characteristics, performances and limits of some technological processes and types of equipment in the field of the agri-food industry C3.5. Development of projects related to milling technology
Transversal competences	CT 1 Applying strategies of perseverance, seriousness, efficiency and work responsibility, punctuality and taking the responsibility for the results of personal activity, creativity, common sense, analytical and critical thinking, problem solving, etc., based on the principles, norms and values of the code of professional ethics in the food field.

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

7.1. Overall course objective	Organise, lead and control the production in milling and bakery productions
7.2. Specific objectives	Description of the main indices of grain quality. The use of methods and techniques for analysis of grain and milling products. Knowledge the problems of training operations for milling grain; Knowledge the problems on operations of the section milling; Manner to achieve technological phases milling; Knowledge of the principles of operation of the equipment from training operations for milling grain and milling section; Interpretation of diagrams the preparation section cereal grist and milling section; Knowledge of the particularities the specific milling rye, maize and rice .

8. Content

8.1. LECTURE	Teaching methods	Observations
Number of hours – 28		
Reception and grain storage		
History of the milling industry. Departments of the mill. Reception and storing grain. Formation of the parties milling	Lecture, Conversation, Explanation	1 lecture = 2 hours
Grain preparation for milling		
The granulometric separation of foreign bodies. The aerodynamic separation of foreign bodies The densitometry separation of foreign bodies The separation of impurities after the form The separation of impurities after the magnetic properties The separation of impurities after color hue of particles The hydrodynamics separation of the impurities from the grain mass Washing the cereals	Lecture, Conversation, Explanation	3 lectures = 6 hours
Conditioning the cereals		
Shelling the cereals	Lecture, Conversation,	3 lectures = 6 hours

Moistening the cereals Control of cleansing effect on the cereals Technological schemes of preparation of milling wheat **Cereal grinding** Technological operations in the mill Classification of the milling machines **Technological functions of the axises and factors influencing there of production capacity** **Sieving the products from milling** The sieving with the plane sieves Dividing per fractions after size to the mill ground products the axises The sieving with the gris machines technological phases of transformation the wheat into flour and classification of milling Control of the process of the milling and forming to the types flours **Milling the rye and maize** Preparing and milling the rye Milling the maize **Processing of the rice for consumption** Preparing and processing of the rice for consumption Storage of flour and corn in silos **The ventilation and transport în milling units** **The flour and cornmeal as finished products of the milling**	Explanation Lecture, Conversation, Explanation Lecture, Conversation, Explanation Lecture, Conversation, Explanation Lecture, Conversation, Explanation Lecture, Conversation, Explanation Lecture, Conversation, Explanation	 1 lecture = 2 hours 1 lecture = 2 hours 2 lectures = 4 hours 1 lecture = 2 hours 1 lecture = 2 hours 1 lecture = 2 hours

8.2. PRACTICAL WORK **Number of hours – 14** Presentation of laboratories – The pilot station. Rules to the labor protection	Explanation, Conversation	1 practical work = 2 hours
Sampling and sample preparation. Physical characteristics, chemical and specific to the cereals	Experiment; Case Study	1 practical work = 2 hours
Methods used to calculate the formation of parties by milling	Explanation, Conversation, Case Study	2 practical work = 4 hours
Variations milling - types of extraction. Determination of extraction	Lecture, Conversation, Explanation; Problematization	1 practical work = 2 hours 1 practical work = 2 hours
Technical scheme of preparing for milling the cereals Technical scheme to the milling	Lecture, Conversation, Explanation;	
Knowledge verification	Examination	1 practical work = 2 hours
8.3. PROJECT **Number of hours – 14** Symbols used in the milling industry. Establishing the theme and contents of projects	Lecture, Conversation, Explanation; Problematization	1 project meetings = 2 hours
Technological dimensioning of the equipment from department to preparing the cereals for milling. Diagram of preparation of the wheat for milling	Lecture, Conversation, Explanation; Problematization	2 project meetings = 4 hours
Technological dimensioning of the equipment from department to milling. The distribution the length of	Lecture, Conversation, Explanation;	1 project meetings = 2 hours

the axises on the passages	Problematization	
The distribution of areas of sifting on the passages. Calculation and choice of the gris machines Calculation and choice of the paver-finishers bran. The diagram for milling of cereals	Lecture, Conversation, Explanation; Problematization	2 project meetings = 4 hours
Teaching and supporting projects	Problematization; Case Study; Discussion.	1 project meetings = 2 hours

Compulsory bibliography:

1. BANU, C. şi colab., (1999), *Manualul inginerului din industria alimentară*, vol. II, Ed. Tehnică, Bucureşti
2. BANU, I., (2010), *Procesarea cerealelor în industria morăritului*, Galaţi University Press.
3. BANU, I. (coordonator), (2011), *Controlul procesului tehnologic de măciniş*, Galaţi University Press.
4. COSTIN, I., (1983), *Tehnologii de prelucrare a cerealelor în industria morăritului, Ed. Tehnică*, Bucureşti
5. COSTIN , I., (1988), *Cartea morarului*, Ed. Tehnică, Bucureşti
6. DANCIU, I., (1997), *Tehnologia şi utilajul industriei morăritului*, vol. I, Ed. Lucian Blaga, Sibiu
7. MAN SIMONA, (2012), *Îndrumător de proiect pentru tehnologia morăritului*,, Ed. Academic Pres Cluj-Napoca
8. MODORAN CONSTANŢA, (2007), *Tehnologia morăritului şi panificaţiei*, Ed.Risoprint Cluj-Napoca
9. PANŢURU, D., BÎRSAN, I. GH.,(1997), *Calculul şi construcţia utilajelor din industria morăritului*, Ed. Tehnică, Bucureşti

Optional bibliography:

1. BANU, C. şi colab., (1998), *Manualul inginerului din industria alimentară*, vol. I, Ed. Tehnică, Bucureşti
2. COSTIN, I., ZAHARIA, T., (1974), *Mori de capacitate mică*, Ed. Tehnică, Bucureşti
3. CREŢU,M., (1977), *Diagrame pentru măcinarea cerealelor*, Ed. Tehnică, Bucureşti
4. GIURCĂ, V., GIUREA, A. M., (2002), *Factori care influenţează proprietăţile de panificaţie ale grâului*, Ed. AGIR, Bucureşti
5. IOANCEA, L. şi colab., (1986), *Maşini, utilaje şi instalaţii în industria alimentară*, Ed. Ceres, Bucureşti
6. LEONTE, M.,(2001), *Tehnologii şi utilaje în industria morăritului*, Pregătirea cerealelor pentru măciniş, Ed. MILLENIUM, Piatra Neamţ
7. MĂRUŢĂ, N., (1967), *Îndrumător tehnic pentru industria morăritului*, Ed. Tehnică, Bucureşti.
8. MORARU, C., RÂPEANU, R., (1972), *Tehnologia industrializării porumbului*, Ed. Tehnică, Bucureşti
9. NAUMOV, I. A., (1962), *Tehnologia morăritului*, Ed. Tehnică, Bucureşti.
10. NICOLAESCU, M., MOLDOVEANU, GH., TEODOSESCU, R., (1973), *Exploatarea şi întreţinerea utilajelor din industria morăritului şi panificaţiei*, Ed. Tehnică, Bucureşti
11. PĂUCEAN, ADRIANA, MAN SIMONA, 2015, *Tehnologia produselor vegetale, Tehnologia morăritului și panificației*, Editura AcademicPres, Cluj-Napoca

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

Course content is consistent with national professional associations specific application

10. Assessment

Type of activity	10.1. Assessment criteria	10.2. Assessment methods	10.3. Percentage of the final grade
10.4. Lecture	Evaluation of theoretical knowledge related to course content	Continuous assessment- Written exam (2 verifications)	50%
10.5. Seminar / Laboratory / project	Evaluation of knowledge of the practical work	oral examination	10%
	Way of presenting, degree of understanding and interpreting the technical calculations	Oral examination / Presentation ppt	15%
	Project content. Concordance between calculations and technical diagrams		25%
10.6. Minimum performance standards			
Mastery of scientific information transmitted through lectures and practical work at an acceptable level. Getting the pass mark at the end of testing the laboratory work is the condition of graduation. The final grade, a weighted average of assessment, practical and project must be equal to or greater than 5.			

[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
6.09.2021

Course coordinator
Assoc. Prof. PhD. Simona Maria Man

Laboratory work/seminar coordinator
Assoc. Prof. PhD. Simona Maria Man

Subject coordinator
Assoc. Prof. PhD. Simona Maria Man

Approved by the Department on
22.09.2021

Head of the Department
Prof. PhD. Sevastița Muste

Approved by the Faculty Council on
28.09.2021

Dean
Prof. PhD. Elena Mudura