

SUBJECT DESCRIPTION

1. Information on the study programme

1.1 Academic institution	UNIVERSITY OF ORADEA
1.2 Faculty	FACULTY OF ENVIRONMENTAL PROTECTION
1.3 Department	ENGINEERING OF FOOD PRODUCTS
1.4 Field of study	CONTROL AND EXPERTISE OF FOOD PRODUCTS
1.5 Cycle of study	BACHELOR
1.6 Study programme/Qualification	CONTROL AND EXPERTISE OF FOOD PRODUCTS/ ENGINEER

2. Information on the discipline

2.1 Name of discipline	COLLOIDAL CHEMISTRY						
2.2 Course holder	Associate prof. dr.Purcărea Cornelia						
2.3 Seminar/Laboratory/Project holder	Lecturer dr.Anamaria Morna						
2.4 Year of study	II	2.5 Semester	4	2.6 Type of evaluation	E	2.7 Regime of discipline	C

(C) Compulsory; (O) Optional; (E) Elective

3. Total estimate time (hours per semester of didactic activities)

3.1 Number of hours per week	4	out of which: 3.2 course	2	out of which 3.3 seminar/laboratory/project	2
3.4 Total hours in the curriculum	56	out of which: 3.5 course	28	out of which 3.6 seminar/laboratory/project	28
Time allotment					hours
Study assisted by manual, course support, bibliography and notes					10
Additional documentation in the library/ on specialised electronic platforms and in the field					10
Preparation of seminars/laboratories/ topics/reports, portfolios and essays					10
Tutorship					10
Examinations					4
Other activities.....					
3.7 Total hours of individual study	48				
3.9 Total hours per semester	104				
3.10 Number of credits	4				

4. Prerequisites (where appropriate)

4.1 curriculum	Organic chemistry, Agrifood biochemistry, Additives of food
4.2 competences	Computer skills

5. Conditions (where appropriate)

5.1. related to course	Projector
5.2. related to seminar/laboratory/ project	Laboratory equipment and reagents mandatory for laboratory protocol

6. Specific competences acquired	
Professional competences	<p>C1. Operation of equipment in food production units. C1.1. Description and use of basic concepts, theories and methods for food engineering on the structure and properties of food components and contaminants, the transformations that they undergo during processing, the devices, equipment and technologies in food industry (knowledge provided by disciplines such as: general, inorganic, organic chemistry, food chemistry, biophysics, biochemistry, physical and colloidal chemistry, devices, equipment and technologies in the food industry) C1.3. Application of basic principles and methods in food engineering to solve technological problems related to the operation of the food industry equipment.</p> <p>C3. Operation of monitoring and automation systems for the processes in food industry and for the food quality control and expertise laboratories ▪ C3.2. Explanation and interpretation of basic concepts, methods and models based on monitoring and automation systems addressed to the processes in the food industry and to the food quality control and expertise laboratories.</p> <p>C4. Quality control of food, raw and auxiliary materials. C4.1. Description and use of basic concepts, theories and methods used in quality control of food products, on the chemistry of compounds that determine food quality, the transformations that they undergo during processing, transport and storage, the apparatus and methods for determining and analyzing of these compounds (knowledge provided by the disciplines of general, inorganic, organic chemistry, food chemistry, biochemistry, analytical chemistry, instrumental analysis, microbiology, hygiene, food additives, food quality control)</p> <p>C5. Expertise of food, raw and auxiliary materials. C5.1. Description and use of basic concepts, theories and methods used in food expertise related to chemical compounds that determine the quality and traceability of food products, the transformations that they undergo during processing, transport and storage, the apparatus and methods for determining and analysis of these compounds and the relevant legislation (knowledge provided by the disciplines of general, inorganic, organic chemistry, food chemistry, biochemistry, analytical chemistry, instrumental analysis, microbiology, hygiene, food additives, food quality control)</p>

7. Objectives of discipline (coming from the specific competences acquired)

7.1 General objectives	<ul style="list-style-type: none"> Familiarize students with the main colloids and emulsifiers used in the food industry, issues of their chemical structure, physicochemical properties, mechanisms of action and information on toxicological conditions and their utilisation
7.2 Specific objectives	<ul style="list-style-type: none"> Exemplify the use of colloids in food

8. Contents*

8.1 Curs	Metode de predare	Nr. Ore / Observații
1.Introduction in colloidal chemistry. What are the colloids. Clasification and properties	ppt presentation	2
2.Hydrocolloids. Lyophilic colloidal system. Clasification of hydrocolloids	ppt presentation	2
3. Olyasaccharides as hydrocolloids. Starch and modified starch	ppt presentation	2
4.Celulose. Dextran	ppt presentation	2
5. Mano-galactans Guar gum, Carruba.	ppt presentation	2
6. Sulfated galactan. Agar, Carageenan	ppt presentation	2
7. Polyuronides - Pectin. Arabic gum. Tragacantha gum. Alginate, Xhantan gum	ppt presentation	2
8.Proteins as hydrocolloids. Characteristic	ppt presentation	2
9. Vegetal protein as hydrocolloids	ppt presentation	2
10.Animal protein as hydrocolloids.	ppt presentation	2
11. Emulsification. Emulsions. Classification. Property.	ppt presentation	2
12.Emulsifiers. The role of emulsifiers in the food industry. Classification. Mechanism of action.	ppt presentation	2
13.Main agrifood emulsifiers	ppt presentation	2
14.Efficiency The role of emulsifiers in the food industry.	ppt presentation	2
Bibliografie		

1. .Banu C- <i>Aditivi și ingrediente pentru industria alimentară</i> , Ed. Tehnică București 2000; 2. .Banu C., - <i>Manualul inginerului de industrie alimentară</i> , Editura Tehnică București, p.345-368, 2002 3. .Banu C., coordonator – <i>Tratat de industrie alimentară, probleme generale, vol. I</i> . Editua ASAB, 2008. 4. .Jianu I, Delia Dumbravă - <i>Extrakte și aditivi agroalimentari</i> . Timisoara, 1997 5. .Pârvu D., - <i>Hidrocoloizi și emulgatori în industria agroalimentară</i> .Ed Eurostampa Timișoara, 1999. 6. Purcărea C. Chiș A – <i>Coloizi în industria alimentară</i> , 2012, Editura Universității din Oradea		
	Metode de predare	Nr. Ore / Observații
8.3 Laborator		
1 General laboratory safety rules and regulations for biochemistry laboratories	Signed the tabel for labor protection; aplication	2
2.Colloidal system; Colloidal solution obtaining; Colloids viscosity;	Aplication, experiments	2
3. Viscosity determination in some gums in different condition	Aplication, experiments	2
4. Glucosan – Strach identification and quantitative determination	Aplication, experiments	2
5.Dextrins – Obtaining dextrins with starch hydrolysis	Aplication, experiments	2
6. Agar – Solidification depending on the pH and Temperaturr Presentation of the methodology of choice of topics for essay writing	Aplication, experiments	2
7. Poliuronides. Pectines	Aplication, experiments	2
8. Determination of esterification degree in pectines	Aplication, experiments	2
9. Milk protein – Milk coagulation - izoelectric point	Aplication, experiments	2
10. Test -hydrocolloids Emulsions - methods of making emulsions; Getting mayonnaise	Aplication, experiments	2
11.Emulsions – Highlighting emulsifiers action	Aplication, experiments	2
12.Emulsions- Extraction and identification of yolk lecithin	Aplication, experiments	2
13. Test - emulsions	Aplication, experiments	2
14. Essay presentation	Videoproiector, laptop, ppt	2
References 1. .Purcarea C.Vicaș S. - Coloizi in industria alimentara , Lucrari practice. Uz intern. 2009 2. Chis A., Morna A., Indrumător laborator coloizi. 2013. 3. ***Colecția de standarde - industria alimentară și calitatea apei 4. *** LEGIS – program informatic referitor la legislatia din Romania 5. *** www.codexalimentarius.net		

* The content, respectively the number of hours allocated to each course / seminar / laboratory / project will be detailed during the 14 weeks of each semester of the academic year.

9. Corroboration of discipline content with the expectations of the epistemic community, professional associations and representative employers from the field corresponding to the study programme

Students will gain the necessary knowledge about the role and use of colloids as a food additive, for different food groups

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the final grade
10.4 Cours	The way in wich responded to the test	Written examination- Test with 9 questions	60%
10.6 Laboratory	• Mode of execution / computing practical	• Summative Evaluation based on continuous assessment ofon practical	20%

	examples <ul style="list-style-type: none"> • presentation 	operational activity în laboratory and additional themes. <ul style="list-style-type: none"> • Report presentation of a food, nomination colloids contained and their role (ppt presentation) Note: <ol style="list-style-type: none"> 1. The topics of essays are selected based on the concepts taught in the course, laboratory methodology and references; will refer to a specific food product to be analyzed and presented as photographic image and communicates in weeks 7 and 8, to avoid overlap; 2. Essay must be send by e-mail in the 13 week in ppt and will be prezedent in week 14 	20%
10.8 Standard minim de performante: at least 5 answers to the written exam test ; at least 5 grad at laboratory activity and essay			

Date of completion

Signature of the course holder

Signature of laboratory holder

01.02.2019 .

Associate professor
Dr Purcărea Cornelia
cpurcare@uoradea.ro

Lecturer
Dr Anamaria Morna
anamaria_simut@yahoo.co.uk

Date of approval in the department

.....

Signature of the Head of Department

Lecturer dr eng.
Adrian Timar
atimar@uoradea.ro

Dean Signature
Prof univ dr. Chereji Ioan
ichereji@uoradea.ro