R O M Â N I A
MINISTERUL EDUCAȚIEI ȘI CERCETĂRII
Universitatea din Craiova
FACULTATEA DE ȘTIINȚE/ DEPARTAMENTUL DE CHIMIE
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Subject Description

1. Program information

1.1. Institution	University of Craiova
1.2. Faculty	Science
1.3. Department	Chemistry
1.4. Study field	Chemistry
1.5. Study level	Master
1.6. Type of education	Full-time
1.7. Study program	Advanced Chemistry

2. Subject information

2.1. Subject			**Complements of macromolecular chemistry**				
2.2. Course coordinator			Conf.dr. Anca Moanță				
2.3. Application coordinator			Conf.dr. Anca Moanță				
2.4. Year of study	II	2.5. Semester	3	2.6. Type of evaluation	E	2.7. Subject type	DS/DOB

3. Total estimated tipe (hours/semester)

3.1. Number of hours per week	4	from which: 3.2 course	2	3.3. seminar/lab	2
3.4. Total hours in curriculum	56	from which: 3.5 course	28	3.6. seminar/lab	28
Time allocation – hours/week					
Study using textbooks, course materials, bibliographies, and notes					35
Additional documentation in the library, on specialized electronic platforms, and in the field					25
Preparation of seminars/labs, assignments, reports, portfolios, and essays					25
Tutoring					5
Examinations					4
Other activities.....					
3.7. Total hours of individual study					94
3.8. Total hours per semester					150
3.9. Number of ECTS					6

4. Preconditions (if the case)

4.1. of curriculum	•
4.2. of competences	•

5. Conditions (if the case)

5.1. for course	• Lecture hall equipped with computer, video projection system, and internet connection
5.2. for labs	• Laboratory equipped with the materials, equipment, and reagents necessary to carry out experimental work

6. Course objectives - expected learning outcomes achieved by completing and passing the course

Knowledge	1. Graduates define, understand, explain, and apply advanced knowledge of chemistry from specialized literature in practice. 2. Graduates select and use appropriate experimental and theoretical methodologies to investigate complex scientific problems, assessing their impact on the environment and society.
Skills	1. Graduates apply major concepts in analytical, inorganic, organic, and physical chemistry to chemical practice. 2. Graduates evaluate and analyze experimental techniques to conduct and design experiments, analyze and test (qualitatively and quantitatively) chemical elements and substances; design, coordinate, and conduct chemical experiments.
Responsibility and authonomy	1. Graduates are able to adapt major scientific concepts in the field of chemistry to conduct research, improve or develop new concepts, knowledge, theories, and operational methods, products, and services in order to apply them in specific activities for product and process quality control. 2. Graduates use classical laboratory instruments/techniques and modern equipment independently, design experiments, and interpret and analyze the obtained results accurately. They design learning situations focused on developing experimental techniques and methods specific to chemical laboratories.

7. Table of contents

7.1. COURSE	Mode of operation	Teaching methods	Allocated time (hours)
1.Properties of biocompatible compounds	On site (week 1)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	2
2. Physical and spectral characterization of macromolecular compounds	On site (week 2)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	2
3.Methods of synthesizing macromolecular compounds	On site (week 3-4)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	4
4.Synthesis of polypeptides	On site (week 5-6)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	4
5.Natural biodegradable macromolecular compounds	On site (weeks 7)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	2
6.Synthetic bioresorbable macromolecular compounds	On site (week 8)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	2
7.Non-biodegradable macromolecular compounds	On site (weeks 9)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	2
8.Polymers used in dentistry	On site (week 10)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	2

9.Extended-release drugs	On site (week 11-12)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	4
10.Excipients with polymeric structure	On site (week 13-14)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	4
References:			
1. Ş. Robu, C. Leonte, I. Corja, Chimia şi fizica polimerilor, MES, Chişinău, 1998. 2. M. Leca, Chimia fizica a macromoleculelor, Ed. Tehnică Bucureşti, 1993. 3. C.Simionescu, Polimeri biocompatibili si biologic activi, Ed. Academiei , 1980 4.Chimie organică, M. Avram, Editura Academiei, vol. I și II, București 1983 5.Chimie organică, M. Iovu, Editura Didactică și Pedagogică, București, 1999. 6.Tratat de chimia compușilor macromoleculari, C. Simionescu, I. Negulescu, Editura Academiei, București, 1993. 7.Organicum, H. Becker și colaboratorii, Editura Științifică și Enciclopedică, București, 1992 8.Chimia polioxometalaților, G. Marcu, M. Rusu, Editura Tehnică, București, 1997. 9.Comportarea termică a polimerilor, C. Vasile, E. M. Călugăru, A. Stoleriu, M. Şabliovschi, E. Mihai, Editura Academiei, București, 1980. 10. Lecture notes, 2025			

7.2. Lab	Mode of operation	Teaching methods	Allocated time (hours)
1.Study of the physical properties of macromolecular compounds	On site (week 1-2)	Experiment, explanation, discussion, debate, and questioning	4
2.Determination of the specific drug-polymer binding capacity	On site (week 3-4)	Experiment, explanation, discussion, debate, and questioning	4
3.The process of penicillin G inactivation	On site (week 5-6)	Experiment, explanation, discussion, debate, and questioning	4
4.Oxacillin retention on gelatin	On site (week 7-8)	Experiment, explanation, discussion, debate, and questioning	4
5.Study of the interaction of azo dyes with collagen using FTIR spectroscopy	On site (week 9-10)	Experiment, explanation, discussion, debate, and questioning	4
6.Study of the interaction of azo dyes with BSA using UV-Vis spectrophotometry	On site (week 11-12)	Experiment, explanation, discussion, debate, and questioning	4
1. Lab Verification	On site (week 13-14)	Experiment, explanation, discussion, debate, and questioning	4
References:			
1. Organicum, Ed. Științifică și Enciclopedică, București, 1982. 2. Lab work presentations, 2025.			

8. Corrrelation of the discipline content with the expectations of representatives of the epistemic community, professional associations, and representative employers in the field related to the program

The content of the course is in line with those of similar courses at universities in Romania and abroad, while also meeting the expectations of professional associations and representative employers in the field.

9. Evaluation

Activity	9.1. Evaluation criteria	9.2. Evaluation method	9.3. Contribution to final score
9.4. Course	theoretical concepts and mechanisms, critical analysis of literature or design of a catalytic system	Written Exam	50%
		Portofolio	20%
9.5. Lab	synthesis, characterization, data interpretation	Project Work	30%
9.6. Minimum performance standard			
• Basic understanding of core concepts. • Knowledge of main types of macromolecular compounds. • Elementary understanding of synthesis methods. • Simple correlation between structure and biological activity. • Completion of practical/project tasks			

Date
22.09.2025

Course coordinator,
Conf.dr. Anca Moanță

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Date of approval
25.09.2025

Head of Department,
Conf.dr. Nicoleta Cioateră