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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	Quality managment in chemistry labs						
2.2. Course coordinator	Lect dr Ganescu Anca						
2.3. Application coordinator	Lect dr Ganescu Anca						
2.4. Year of study	II	2.5. Semester	3	2.6. Type of evaluation	V	2.7. Subject type	DC/DOB

### 3. Total estimated tipe (hours/semester)

3.1. Number of hours per week	3	from which: 3.2 course	1	3.3. seminar/lab	2
3.4. Total hours in curriculum	42	from which: 3.5 course	14	3.6. seminar/lab	28
Time allocation – hours/week					
Study using textbooks, course materials, bibliographies, and notes					40
Additional documentation in the library, on specialized electronic platforms, and in the field					34
Preparation of seminars/labs, assignments, reports, portfolios, and essays					25
Tutoring					5
Examinations					4
Other activities.....					
<b>3.7. Total hours of individual study</b>					108
<b>3.8. Total hours per semester</b>					150
<b>3.9. Number of ECTS</b>					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

<b>Knowledge</b>	<ol style="list-style-type: none"> <li>1. Graduates define, understand, explain, and apply advanced knowledge of chemistry from specialized literature in practice.</li> <li>2. Graduates write analysis and scientific reports, presenting the results of their research and experiments, in line with professional ethics and standards.</li> <li>3. The graduate describes and integrates interdisciplinary knowledge into the implementation of research projects.</li> </ol>
<b>Skills</b>	<ol style="list-style-type: none"> <li>1. Graduates apply major concepts in analytical, inorganic, organic, and physical chemistry to chemical practice.</li> <li>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.</li> <li>3. Graduates apply critical thinking, following the structure and principles of scientific writing to develop and present scientific reports.</li> </ol>
<b>Responsibility and autonomy</b>	<ol style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>3. Graduates assume responsibility for managing interdisciplinary collaborations and coordinating activities within work and research teams..</li> </ol>

## 7. Table of contents

<b>7.1. COURSE</b>	<b>Mode of operation</b>	<b>Teaching methods</b>	<b>Allocated time (hours)</b>
1. Quality assurance in medical laboratories Generalities ISO 15189. - The difference between accreditation and certification Presentation of the chapters of the SN EN ISO15189 standard regarding technical requirements	On site (week 1)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	1
2 . Medical laboratory personnel -Qualification of personnel, laboratory organization chart -Introduction of newly hired personnel into the organizational environment	On site (week 2)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	1

<p>3 . Staff Training and Registration</p> <p>-Competency Assessment</p> <p>-Continuing Medical Education and Professional Development</p>	On site (week 3)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	1
<p>4.</p> <p>Space and environmental conditions in the medical analysis laboratory</p> <p>-Design and use of space and utilities</p> <p>-Legislation in force regarding the organization of spaces in the medical analysis laboratory</p>	On site (weeks 4-5)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	2
<p>5</p> <p>Staff spaces</p> <p>-Storage and collection of biological samples</p> <p>-Monitoring environmental conditions in medical laboratories</p>	On site (week 6)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	1
<p>6 . Laboratory equipment -Equipment acceptance -Equipment instructions</p> <p>-Equipment calibration and metrological traceability</p> <p>-Equipment maintenance and repair</p>	On site (weeks 7)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	1
<p>7 . Equipment records.</p> <p>-Contents of the laboratory equipment</p>	On site (week 8)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	1

file			
<p>8 . Reagents and consumables in the medical analysis laboratory -Receipt, storage and stock management</p> <p>-Reagent acceptance tests -Instructions for use/handling</p> <p>-Records regarding reagents and consumables</p>	On site (week 9)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	1
<p>9 . Preanalytical processes in the medical analysis laboratory -Information for patients regarding the collection of biological samples</p> <p>-Medical analysis request form</p> <p>-Collection and handling of the primary sample</p>	On site (week 10)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	1
<p>10 . Transport and reception of biological samples</p> <p>-Handling, processing and storage of biological samples</p>	On site (week 11)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	1
<p>11 . Ensuring quality control in the medical analysis laboratory -Internal quality control materials: frequency and adequacy of use</p>	On site (weeks 12-13)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	2

-Organization, performance and interpretation of Internal Quality Control in the medical analysis laboratory -Westgard rules in quantitative dosages -Internal quality control in the pre-examination stage			
12 . Examination processes in the medical analysis laboratory -Definition and components of measurement uncertainty -Estimation of measurement uncertainty -Uncertainty budget, possible sources of uncertainty arising in the medical laboratory -Biological reference intervals or clinical decision values	On site (week 14)	Lecture, explanation and interactive presentation, heuristic conversation, problem solving	1
<b>References:</b> SR EN ISO 15189:2013 Laboratoare medicale. Cerințe pentru calitate și competență. . SR EN ISO 9001. Sisteme de management al calității. . SR EN ISO 9000. Sisteme de management al calității. Principii de bază și vocabular. . Popa, C., Sorescu, G., Vănan, M., 2008 - Note de curs CALILAB – Managementul calității în laboratoarele medicale, București 2008 ISO/IEC Ghid 98-3 Incertitudinea de măsurare – partea a 3: Ghid de exprimare a incertitudinii de măsurare (GUM :1995) <a href="http://www.renar.ro">www.renar.ro</a>			

<b>7.2. Lab</b>	Mode of operation	Teaching methods	Allocated time (hours)
1Safety rules in Quality management in chemistry lab	On site (week 1)	Experiment, explanation, discussion, debate, and questioning	4
2Determination of water hardness	On site (week 3)	Experiment, explanation, discussion, debate, and	4

		questioning	
3.Determination of chlorides in water	On site (week 5)	Experiment, explanation, discussion, debate, and questioning	4
4 . Determination of the alkalinity and acidity of water	On site (week 7)	Experiment, explanation, discussion, debate, and questioning	4
5Determination of chemical substances in the natural composition of water.  Determination of CO <sub>2</sub> in water.	On site (week 9)	Experiment, explanation, discussion, debate, and questioning	4
6Complexometric determination of  Ca <sup>2+</sup> and Mg <sup>2+</sup> in water	On site (week 11)	Experiment, explanation, discussion, debate, and questioning	4
7.Lab Verification	On site (week 13)	Experiment, explanation, discussion, debate, and questioning	4
References:			
1. Luca C., Duca Al., Crișan I., <i>Chimie analitică și analiză instrumentală</i> , Ed. Did. și Pedag., București, 1984.			
2. Badea, I.A., <i>Chimie analitică. Echilibre în soluție. Probleme</i> , Ed. Did. și Pedag., București, 2004			
3. Mureșeanu M., <i>Chimie analitică calitativă</i> , Ed. Sitech, Craiova, 2005.			

### 8. Correlation 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	knowledge of the content related to the discipline Management and Quality Assurance -assimilation of knowledge and coherence and clarity in oral and written	Written Exam	60%

	expression		
9.5. Lab	practical skills acquired during the semester. -method of writing laboratory reports/portfolio	Project Work	40%
9.6. Minimum performance standard			
Establishing the physicochemical properties of the chemical compounds analyzed during practical work ; Utilizarea corectă a metodelor și tehnicilor, a materialelor, substanțelor și aparaturii cu respectarea normelor de securitate și sănătate în muncă la efectuarea unui experiment chimic  Carrying out chemical analyses and a quality study, with the identification and application of appropriate methods and techniques			

Date  
22.09.2025

Course coordinator,  
Lect dr Ganescu Anca

Date of approval  
25.09.2025

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Head of Department,  
Conf.dr. Nicoleta Cioateră