

## COURSE SYLLABUS

### 1. Information about the study program

1.1 University	“Babeş-Bolyai” University
1.2 Faculty	Faculty of Chemistry and Chemical Engineering
1.3 Department	Department of Chemical Engineering
1.4 Field of study	Chemical Engineering
1.5 Program level (BA or MA)	Master
1.6 Study program / Qualification	Advanced Chemical Process Engineering

### 2. Information about the subject

2.1 Subject title	<b>Elaboration of Master Dissertation – CME7345</b>						
2.2 Course activities professor	-						
2.3 Seminar activities professor	Scientific advisor of the dissertation						
2.4 Year of study	II	2.5 Semester	4	2.6. Type of assessment	C	2.7 Subject regime	DS/Obl.

### 3. Total estimated time (teaching hours per semester)

3.1 Number of hours per week	6	Out of which: 3.2 course	-	3.3 laboratory	6
3.4 Total number of hours in the curriculum	84	Out of which: 3.5 course	-	3.6 laboratory	84
Time distribution:					hours
Study based on textbook, course packet, references and lecture notes					24
Additional research in the library, on specialist electronic platforms (databases) and through field activities.					64
Preparing seminar/laboratory work, homework, reports, portfolios and essays.					75
Tutoring					-
Assessment (examinations)					3
Other activities					-
3.7 Total hours for individual study	166				
3.8 Total hours per semester	250				
3.9 Number of credits	10				

**4. Pre-requisites** (where applicable)

4.1 Curriculum	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
4.2 Competences	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>

**5. Conditions** (where applicable)

5.1 For course development	<ul style="list-style-type: none"> <li>• Not applicable</li> </ul>
5.2 For seminar/laboratory development - applications	<ul style="list-style-type: none"> <li>• The students will attend the program of preparation of the dissertation paper established by the scientific advisor of the dissertation.</li> <li>• The students will prepare the documentation using the existing sources both in the specialized libraries, in the international electronic databases and in those provided by the scientific advisor of the dissertation.</li> <li>• The students will assimilate the stipulations of the Guide for the Framework Content of the Dissertation Paper.</li> <li>• The students will know the goals, means, stages</li> <li>• of preparation of the dissertation.</li> <li>• The dissertation paper will be delivered to the scientific advisor of dissertation.</li> </ul>

**6. Specific competences**

<b>Professional competences</b>	<ul style="list-style-type: none"> <li>• Applying the knowledge acquired during the master studies in preparing the dissertation paper, demonstrating the capacity to develop and capitalize the results obtained during the scientific research.</li> <li>• Applying the thorough knowledge and the specific research methods in the chemical processes engineering.</li> <li>• Detailed and pertinent use of the experiment as an assessment and foundation method of assessment of the decisions.</li> <li>• Designing, executing and capitalizing the results of the scientific research specific to process engineering.</li> </ul>
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Transversal competences	<ul style="list-style-type: none"> <li>• Preparing independently complex professional tasks and autonomous development of research-design activities, using computer assisted technology and complying with the norms of professional ethics and moral conduct.</li> <li>• Demonstrating the capacity of coordination of the activity, analytical thinking, adaptability and flexibility.</li> <li>• Self-assessment of the professional efficiency and establishing the needs of continuous formation, permanent information and documentation in the field of activity and related areas, in correlation with the needs of the labour market.</li> <li>• Capacity to conceive and prepare a scientific paper.</li> <li>• Capacity to defend a scientific presentation in a foreign language.</li> </ul>
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## 7. Course objectives and learning outcomes (deriving from the acquired competences)

7.1 Subject's general objective	<ul style="list-style-type: none"> <li>• Elaboration of a scientific paper in the form of a publishable scientific article.</li> <li>• Development of the capacity and competences of applying the knowledge of the chemical process engineering in the realization of the proposed goals in the chosen research subject in order to achieve original results and capitalize the results of the scientific research.</li> </ul>
7.2 Specific objectives	<p>Finalization of the proposed research plan by preparing the experimental research works/elaboration of original applications.</p> <ul style="list-style-type: none"> <li>• Use of the specialized knowledge in order to establish the research strategy and the program of original experiments and simulations, explanation and partial interpretation of results.</li> <li>• Use of the conceptual and methodological research apparatus in order to develop new/original theoretical approaches and products/technology with practical applications.</li> <li>• Proper selection and use of the assessment methods for the pertinent interpretation of the original results of the research by formulating conclusions and arguing the proposed solutions.</li> <li>• Use of fundamental and applicative concepts in the development of the research projects.</li> </ul>

## 8. Content

8.1 Laboratory	Teaching methods	Observations
8. 1. 1. Presentation in the dissertation of the manner to prepare the experimental activities/applications for the achievement of the original elements in the dissertation according to the requirements of the presentation and elaboration of a scientific article.	Explanation; Conversation; Description; Conceptualization	6
8. 1.2. Critical analysis and presentation in the dissertation of the stages of realization of the experimental activities/original applications according to the requirements of the presentation and elaboration of a scientific article.	Explanation; Conversation; Description; Conceptualization	10
8. 1.3. Synthesis of the collection and interpretation methods of the original experimental data / results of original applications according to the requirements of the presentation and elaboration of a scientific article.	Explanation; Conversation; Description; Conceptualization	14
8.1.4. Presentation of the methodologies of analysis and systematization of the original experimental results / results of original applications according to the requirements of the presentation and elaboration of a scientific article.	Explanation; Conversation; Description; Conceptualization	10
8. 1. 5. Underlying in the dissertation paper of the relevance of the original results obtained in the context of the specialized literature according to the requirements of the presentation and elaboration of a scientific article.	Explanation; Conversation; Description; Conceptualization	18
8. 1. 6. Study of the manner of preparing and hearing scientific defenses (conferences, symposiums, public defenses of doctoral theses).	Explanation; Conversation; Description; Conceptualization	6
8. 1. 7. Elaboration of the research paper conclusions by reporting the final experimental results/final results of the applications according to the requirements of the presentation and elaboration of a scientific article.	Explanation; Conversation; Description; Conceptualization	20
<b>References</b> <ol style="list-style-type: none"> <li>1. Bibliographical sources mentioned in the course syllabuses in the curriculum for the Advanced Chemical Process Engineering program.</li> <li>2. Chemical Abstracts Analytical Abstracts, Beilstein.</li> <li>3. Electronic databases (Science Direct, Scopus, SpringerLink, Web of Science, Wiley Journals, Proquest Journals, etc.)</li> <li>4. The bibliographical sources indicated by the scientific advisor of the dissertation..</li> </ol> <p>Note: The bibliographical elements can be consulted at the Library of the Department of Chemical Engineering, at the Library of the Faculty of Chemistry and Chemical Engineering – extension of the “Lucian Blaga” Central Library of the “Babeş-Bolyai” University., and the “Lucian Blaga” Central Library.</p>		

## 9. Corroboration / validation of the subject's content in relation to the expectations coming

**from representatives of the epistemic community, of the professional associations and of the representative employers in the program's field**

<ul style="list-style-type: none"> <li>The content of the discipline is in agreement with the partial competences required for the possible occupations and the competences and qualifications have been established in accordance with the competences in the Diploma Supplement and the qualifications of the NCA</li> </ul>
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#### **10. Assessment (examination)**

Type of activity	10.1 Assessment criteria	10.2 Assessment methods on-line or on-site	10.3 Weight in the final grade
10.5 Seminar / laboratory	Presentation of the appropriate methods, techniques and instruments for the preparation and achievement of the research objectives with original character.	Assessment of the techniques and instruments chosen for preparing and achieving the research objectives with original character.	10%
	Presentation of the manner of realization of the scientific papers with original character, collection and interpretation of final experimental data / final application results.	Assessment of the manner of realization of the scientific papers with original character, collection and interpretation of final experimental data / final application results.	60%
	Presentation of the dissertation in the form of a scientific article.	Assessment of the paper presentation with final experimental data/final application results.	10%
10.6 Minimum performance standards			
<ul style="list-style-type: none"> <li>The mark 5 (five) for the assessment of each of the assessment criteria.</li> <li>Knowledge of the main means to achieve and present the research results in the field of computer assisted chemical process engineering.</li> </ul>			

Date of filling

10.04.2024

Signature of the  
course professor

Signature of the  
seminar professor

Signature of the scientific advisor  
of the dissertation

Date of approval by  
the Department

22.04.2024

Head of Department signature

Prof. dr. ing. Turdean Graziella

