

COURSE DESCRIPTION

Elaboration of Master Dissertation

Academic year 2026 - 2027

1. Programme-related data

1.1. Higher Education Institution	"Babeş-Bolyai" University
1.2. Faculty	Faculty of Chemistry and Chemical Engineering
1.3. Department	Department of Chemical Engineering
1.4. Field	Chemical Engineering
1.5. Level of study	Master
1.6. Degree programme / Qualification	Advanced Chemical Process Engineering
1.7. Form of education	Full time education

2. Course-related data

2.1. Course title	Speciality Practice			Course code	CME7345
2.2. Course coordinator	-				
2.3. Seminar coordinator	Scientific supervisor of the dissertation thesis				
2.4. Year of study	II	2.5. Semester	4	2.6. Type of assessment	Viva voce
2.7. Course status	Compulsory			2.8. Course type	Specialisation subject

3. Total estimated time (hours per semester of teaching activities)

3.1. Number of hours per week	6	of which: 3.2. course		3.3. seminar/ laboratory/ project	6
3.4. Total of hours in the curriculum	84	of which: 3.5. course		3.6. seminar/ laboratory	84
Time allocation for individual study (IS) and self-taught activities (ST)					hours
Learning from textbooks, course materials, bibliography, and notes (IS)					24
Additional research in the library, on subject-specific electronic platforms, and on-site					64
Preparing seminars/ laboratories/ projects, assignments, reports, portfolios, and essays					75
Tutoring (professional guidance)					-
Examinations					3
Other activities					-
3.7. Total hours of individual study (IS) and self-taught activities (ST)				166	
3.8. Total hours per semester				250	
3.9. Number of credits				10	

4. Prerequisites (where applicable)

4.1. curriculum-related	Not applicable
4.2 skills-related	Not applicable

5. Specific conditions (where applicable)

5.1. course-related	Not applicable
5.2. seminar/laboratory-related	<ul style="list-style-type: none"> • The students will attend the program of preparation of the dissertation paper established by the scientific advisor of the dissertation • 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. • The students will attend the laboratory with safety equipment

	(overall, gloves, goggles). •The students will know the goals, means, stages of the laboratory work they are going to attend. •The dissertation paper will be delivered to the scientific advisor of dissertation
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6.1. Competencies resulting from the completion of the degree programme (as referred to in the curriculum)¹

Professional competencies	
Competency code	Competency
PC3	Development and use of mathematical models and simulators in process engineering for diagnosis of problems, analysis of optimum operating systems and control of (bio)chemical processes.
PC4	Development of processes, apparatus and equipment specific to process engineering by promoting new solutions for process intensification, optimum operation and control.
PC6	Quality and resource management in process engineering by applying the systemic approach and the principles of longterm development.
Transversal competencies	
Competency code	Competency
TC1	Independent execution of complex professional assignments and autonomous development of project-research activities by using computer-assisted techniques and by observing the norms of professional ethics and moral conduct.
TC3	Self-assessment of professional performances and determining the continuous training needs, permanent information and documentation in the field of activity and related areas, according to the needs of the labour market.

6.2. Learning outcomes relevant to the degree programme (as referred to in the curriculum)²

Learning outcomes targeted by the subject		
Competency code	Knowledge and comprehension	Specific academic skills
PC2 TC1	1. Performing a critical analysis based on CAD tools, to identify possible solutions to complex problems of designing equipment and plants in a chemical process	1. Development of integrated projects, based on CAD tools, for the creative development of the design of devices, equipment and plants in the chemical process industries
PC6 CT2	2. Knowledge of concepts and theories specific to resources and quality management for process engineering, in the context of sustainable development	2. Use of qualitative and quantitative methods for assessing risk factors, operational safety and management, in the development of new projects for resources and quality management

7. Subject-specific learning outcomes

Knowledge and comprehension
1. Applying the thorough knowledge and the specific research methods in the chemical processes engineering.
2. 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.
Specific academic skills

¹ The professional and/or transversal skills targeted by the subject for which the course description is prepared will be copied from the curriculum of the degree programme. For each competency, the complete entry, including the competency code, will be copied with the exact wording that appears in the curriculum, without any changes. If no competency is copied from either of the two categories, the row corresponding to that category is deleted from the table.

² The learning outcomes relevant for the degree programme and targeted by the subject for which the course description is prepared will be listed. The entries, copied without any changes from the Curriculum by subject type (Core Subject/Specialisation Subject/Complementary Subject), are listed under the corresponding competency.

1. Use of fundamental and applicative concepts acquired by the student at the disciplines stipulated in the curriculum and studied during the master and bachelor program, in the development of the research activities.
2. 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.
3. Use of fundamental and applicative concepts in the development of the research projects and master's thesis.

8. Contents





















8.2. Seminar/ laboratory	Teaching and learning methods	Remarks
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
Bibliography		
1.Bibliographical sources mentioned in the course syllabus of the curriculum for the ICAP program.		
2.Electronic databases (Science Direct, Scopus, SpringerLink, Web of Science, Wiley Journals, Proquest Journals, etc.)		
3.The bibliographical sources indicated by the scientific advisor of the dissertation.		

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.

9. Evaluation

Type of activity	9.1 Evaluation criteria ³	9.2 Evaluation methods ⁴	9.3 Percentage in the final grade
9.4. Course	-	-	-
9.5. 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	20 %
	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.	20 %
9.6 Minimum standard for passing			
<ul style="list-style-type: none"> • The mark 5 (five) for the assessment of each of the assessment criteria. • Knowledge of the main means of documentation for the research in the field of computer assisted chemical process engineering. 			

10. SDG labels (Sustainable Development Goals)⁵

		Sustainable Development Generic Label						
								
								

³ The evaluation criteria must directly reflect the learning outcomes targeted at the level of the degree programme respectively at the level of the subject. More specifically, the learning outcomes set out in the expected learning outcomes are assessed.

⁴ Both final evaluation methods and ongoing evaluation strategies should be established.

⁵ Select a single label which, according to the [Implementation of SDG labels in the academic process](#), best matches the subject. If the subject addresses sustainable development in a generic manner (i.e. by presenting/introducing the general framework of sustainable development, etc.), then the Sustainable Development generic label may be applied. If none of the labels describe the subject, select the last option: “No label applies.”

10 INEGALITĂȚI REDUSE 	11 ORASE ȘI COMUNITĂȚI DURABILE 	12 CONSUM ȘI PRODUCȚIE RESPONSABILĂ 	13 ACȚIUNE CLIMATICĂ 	14 VIAȚĂ ACVATICĂ 	15 VIAȚĂ TERESTRĂ 	16 PACE, JUSTIȚIE ȘI INSTITUȚII EFICIENTE 	17 PARTENERIATE PENTRU REALIZAREA OBIECTIVELOR 	No label applies
								

Date of entry:
23.04.2026

Signature of course coordinator

Signature of seminar coordinator

Scientific supervisor

Scientific supervisor

Date of approval in the department:
29.04.2026

Signature of the head of department

Prof. habil. dr. eng. Graziella L. Turdean