

SYLLABUS

1. Information regarding the programme

1.1 Higher education institution	Babeş-Bolyai University, Cluj-Napoca
1.2 Faculty	Chemistry and Chemical Engineering
1.3 Department	Hungarian Department of Chemistry and Chemical Engineering
1.4 Field of study	Chemistry
1.5 Study cycle	Master
1.6 Study program / Qualification	Chemistry and Engineering of Nano- and Biomaterials

2. Information regarding the discipline

2.1 Name of the discipline	Development activities – CME 8217						
2.2 Course coordinator	Coordinator of dissertation						
2.3 Seminar coordinator	Coordinator of dissertation						
2.4 Year of study	I	2.5 Semester	1	2.6. Type of evaluation	VP	2.7 Discipline regime	DS

3. Total estimated time (hours/semester of didactic activities)

3.1 Hours per week	6	Of which: 3.2 course	-	3.3 seminar/laboratory	6
3.4 Total hours in the curriculum	84	Of which: 3.5 course	-	3.6 seminar/laboratory	84
Time allotment:					41 Hours
Learning using manual, course support, bibliography, course notes					6
Additional documentation (in libraries, on electronic platforms, field documentation)					22
Preparation for seminars/labs, homework, papers, portfolios and essays					10
Tutorship					-
Evaluations					3
Other activities:					-
3.7 Total individual study hours	41				
3.8 Total hours per semester	125				
3.9 Number of ECTS credits	5				

4. Prerequisites (if necessary)

4.1 curriculum	<ul style="list-style-type: none"> not necessary
4.2 competencies	<ul style="list-style-type: none"> not necessary

5. Prerequisites (if necessary)

5.1. for the course	<ul style="list-style-type: none">• not necessary
5.2. for the seminar /lab activities	<ul style="list-style-type: none">• Students will follow the program of development activities - applications established by the supervisor of the dissertation work.• Students will complete the documentation using existing sources both in specialized libraries, in international electronic databases and those made available by the supervisor of the dissertation work.• Students will present themselves in the laboratory with protective equipment (gown, gloves, glasses).• Students will know the objectives, the means, the instrumentation and the stages of the laboratory work they are going to perform.• The reports with literature data will be submitted to the dissertation supervisor (scientific leader).

6. Specific competencies acquired

Professional competencies	<ul style="list-style-type: none">• Identifying and defining a research topic in the field of chemical process engineering, developing and implementing a plan to achieve the proposed objectives and capitalizing on the scientific research results obtained.• Application of in-depth knowledge and specific research methods in chemical process engineering.• The nuanced and relevant use of the experiment as a method of evaluating and substantiating decisions.• Designing, realizing and exploiting the results of scientific research specific to process engineering.
Transversal competencies	<ul style="list-style-type: none">• The independent execution of complex professional tasks and the autonomous conduct of research-design activities, using computer-assisted techniques and respecting the norms of professional ethics and moral conduct.• Demonstrated ability to coordinate activity, analytical thinking, adaptability and flexibility.• Self-evaluation of own professional performance and establishment of continuous training needs, information and permanent documentation in his field of activity and related fields, in correlation with the needs of the labor market.• The ability to design and write a scientific article.• The ability to give a scientific presentation in a foreign language.

7. Objectives of the discipline (outcome of the acquired competencies)

7.1 General objective of the discipline	<ul style="list-style-type: none">• The development by means of specific documentation of the capacity and competences to apply chemical process engineering knowledge to the achievement of the proposed research objectives in order to obtain and capitalize on the expected scientific research results.
7.2 Specific objective of the discipline	<ul style="list-style-type: none">• Choosing and carrying out an extensive study of the specialized literature related to the research theme, organizing and synthesizing the data with the acquisition of field-specific terminology; knowledge of general and specific research methods.

	<ul style="list-style-type: none"> • Using specialist knowledge to establish the research strategy and the program of experiments and simulations; explaining and interpreting the results. • Using the conceptual and methodological research apparatus for the development of new theoretical approaches and products/technologies with practical applications. • The selection and appropriate use of evaluation methods in order to interpret the relevant research results with the formulation of conclusions and the argumentation of the proposed solutions. • Use of fundamental and applied concepts in the development of research projects.
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8. Content

8.1 Laboratory	Teaching methods	Remarks
8.1.1. Initiation for documentation in specialized libraries (printed format)	Explanation. Conversation. Description.	
8.1.2. Initiation of accessing electronic sources of international documentation (Science Direct, Scopus, SpringerLink, Web of Science, Wiley Journals, Proquest Journals, etc.)	Explanation. Conversation. Description. Discussion	
8.1.3. Making documentation in the field of the master's program in specialized libraries (selective): computer-aided chemical process engineering; deepening the knowledge of physical chemistry, electrochemical processes and materials; thermal integration; intensification of chemical processes; mathematical modeling; acquisition of experimental data; advanced process management; depollution processes and green chemistry; thermal integration; risk and quality management.	Explanation. Conversation. Description. Discussion	
8.1.4. Making documentation in the field of the master's program in specialized libraries (selective): computer-aided chemical process engineering; deepening the knowledge of physical chemistry, electrochemical processes and materials; thermal integration; intensification of chemical processes; mathematical modeling; acquisition of experimental data; advanced process management; depollution processes and green chemistry; thermal integration;	Explanation. Conversation. Description. Discussion	

risk and quality management.		
8.1.5. Systematization of the information accessed in the specialized literature	Explanation. Conversation. Description. Discussion	
8.1.6. Presentation of reports with literature data	Explanation. Conversation. Description. Discussion	
8.1.7. Presentation of the portfolio of dissertation topics and choice of topic, together with the scientific supervisor.	Explanation. Conversation. Description. Discussion	
<p>Bibliografy:</p> <ol style="list-style-type: none"> 1. The bibliographic sources mentioned in the subject sheets of the curriculum of the CINB program. 2. Electronic databases (Science Direct, Scopus, SpringerLink, Web of Science, Wiley Journals, Proquest Journals, etc.) 3. The bibliographic sources indicated by the dissertation supervisor (scientific supervisor). <p>Note: The bibliographic 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 at the "Lucian Blaga" Central Library.</p>		

9. Corroborating the content of the discipline with the expectations of the epistemic community, professional associations, and representative employers within the field of the program

<ul style="list-style-type: none"> Students acquire a solid knowledge base by the concepts and theoretical and methodological approach on mainly practical aspects and by using dedicated software in the field, according to partial competences required for occupations listed in Grid 1 - RNCIS.

10. Evaluation

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the grade (%)
10.5 Seminar-Laboratory	Presentation of reports with literature data.	Elaboration and presentation of reports with literature data	40%
	Learning how to document.	Evaluation of the variety of documentation methods	10%
	The correctness, completeness and argumentation of the systematization of the information collected from the specialized literature.	Evaluation of the correctness, completeness and argumentation of the systematization of the information collected from the specialized literature	30%
	Integrating the documentation of collected literature data with the chosen dissertation topic.	Evaluation of the integration of documentation of collected literature data with the chosen dissertation topic	20%

10.6 Minimum performance standards

- 5 is the minimum average
- Capability to critically analyze own approach for solving problems; use computer and English language for continuous learning.

Date

Signature of course coordinator

Signature of seminar coordinator

03.04. 2024

Dissertation supervisor (scientific supervisor)

Date of approval

04.04.2024

Signature of the Director of the Department

Prof. Habil. Dr. Ing. Csaba Paizs

