



UNIVERSITATEA BABES-BOLYAI
BABES-BOLYAI TUDOMÁNYEGYETEM
BABES-BOLYAI UNIVERSITÄT
BABES-BOLYAI UNIVERSITY
TRADITIO ET EXCELLENTIA

Tradiție și Excelență prin
Cultură - Știință - Inovație din 1581



Facultatea de Chimie și Inginerie Chimică

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SYLLABUS

Development activities-applications II

University year 2025 - 2026

1. Information regarding the programme

1.1. Higher education institution	"Babes-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. Study cycle	Master
1.6. Study programme/Qualification	Advanced Chemical Process Engineering
1.7. Form of education	Full time education

2. Information regarding the discipline

2.1. Name of the discipline	Development activities-applications II			Discipline code	CME6124
2.2. Course coordinator	Scientific advisor of the dissertation paper				
2.3. Seminar coordinator	Scientific advisor of the dissertation paper				
2.4. Year of study	I	2.5. Semester	2	2.6. Type of evaluation	VP
2.7. Discipline regime	DS/Ob				

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

3.1. Hours per week	7	of which: 3.2 course	-	3.3 seminar/laboratory	7
3.4. Total hours in the curriculum	98	of which: 3.5 course	-	3.6 seminar/laborator	98
Time allotment for individual study (ID) and self-study activities (SA)					hours
Learning using manual, course support, bibliography, course notes (SA)					2
Additional documentation (in libraries, on electronic platforms, field documentation)					8
Preparation for seminars/labs, homework, papers, portfolios and essays					14
Tutorship					-
Evaluations					3
Other activities:					-
3.7. Total individual study hours	27				
3.8. Total hours per semester	125				
3.9. Number of ECTS credits	5				

4. Prerequisites (if necessary)

4.1. curriculum	Not applicable
4.2. competencies	Not applicable

5. Conditions (if necessary)

5.1. for the course	Not applicable
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5.2. for the seminar /lab activities	<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, phases of preparation of the dissertation paper The papers will be delivered to the scientific advisor or of dissertation paper
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6. Specific competencies acquired ¹

Professional/essential competencies	<ul style="list-style-type: none"> Identifying and defining a research subject in the area of chemical process engineering, elaboration and implementation of a plan to achieve the proposed objectives, and capitalization of the results of the scientific research. Applying the thorough knowledge and the specific research methods in the chemical processes engineering. Detailed and pertinent use of the experiment as an assessment method and foundation of the decisions. Designing, executing and capitalizing the results of the scientific research specific to process engineering.
Transversal competencies	<ul style="list-style-type: none"> 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. Demonstrating the capacity of coordination of the activity, analytical thinking, adaptability and flexibility. 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. Ability to conceive and prepare a scientific paper. Ability to defend 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"> Development by specific documentation means of the capacity and competences of applying the chemical process engineering knowledge in the realization of the proposed research goals in order to achieve and capitalize the presumed results of the scientific research.
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¹ One can choose either competences or learning outcomes, or both. If only one option is chosen, the row related to the other option will be deleted, and the kept one will be numbered 6.



<p>7.2 Specific objective of the discipline</p>	<ul style="list-style-type: none"> • Selection and realization of an extended research of the data in the literature corresponding to the research subject, organization and synthesis of the data by acquiring the domain-specific terminology; knowledge of the general and specific research methods. • Realization a preliminary research plan and making preliminary experimental tests related to the selected research subject. • Use of the specialized knowledge to establish the research strategy and the program of experiments and simulations, explanation and interpretation of results. • Use of the conceptual and methodological research apparatus to develop new/original theoretical approaches and products/technology with practical applications. • Proper selection and use of the assessment methods for the pertinent interpretation of the research results by drawing conclusions and arguing the proposed solutions. • Use of fundamental and applicative concepts in the development of the research projects.
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8. Content

8.1 Laboratory	Teaching methods	Remarks
8.1.1. Documentation in the subject of the proposed dissertation in specialized libraries (printed format)	Explanation; Conversation; Description; Conceptualization	10
8.1.2. Documentation in the subject of the dissertation by accessing of electronic international documentation sources (Science Direct, Scopus, SpringerLink, Web of Science, Wiley Journals, Proquest Journals, etc.)	Explanation; Conversation; Description; Conceptualization	10
8.1.3. Selection of the adequate methods, techniques, and instruments for observation, measuring, experimenting, control, optimization and modeling.	Explanation; Conversation; Description; Conceptualization	10
8.1.4. Preliminary tests of the selected methods, techniques, and instruments.	Explanation; Conversation; Description; Conceptualization	46
8.1.5. Elaboration of the preliminary research plan to realize the dissertation.	Explanation; Conversation; Description; Conceptualization	6
8.1.6. Hearing scientific defenses (conferences, symposiums, public defenses of doctoral theses).	Explanation; Conversation; Description; Conceptualization	6
8.1.7. Presentation of the results of the experimental tests/preliminary applications, and analysis of the future research directions.	Explanation; Conversation; Description; Conceptualization	10
<p>Bibliography</p> <ol style="list-style-type: none"> 1. Bibliographical sources mentioned in the course syllabus of the curriculum for the ICAP program. 2. Chemical Abstracts, Analytical Abstracts, Beilstein. 3. Electronic databases (Science Direct, Scopus, SpringerLink, Web of Science, Wiley Journals, Proquest Journals, etc.) 4. 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 “Babeș-Bolyai” University, and the “Lucian Blaga” Central Library.

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

- The content of the syllabus 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

10. Evaluation

Activity type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percentage of final grade
10.4 Course	-	-	-
10.5 Seminar/laboratory	Presentation of the papers with the data from the literature specific to the selected subject.	Assessment of the papers presented with the data from the literature.	20 %
	Acquiring the adequate methods, techniques, and instruments for observation, measurement, experimenting, control, optimization and modelling, selected for the selected research subject	Assessment of the (selected) techniques and instruments for observation, measuring, experimenting, control, optimization and modeling	20 %
	Correctness, completeness, and argumentation of the systematization of the information collected from the literature	Evaluation of the correctness, completeness, and argumentation of the systematization of the information collected from the specialized literature.	10 %
	Presentation of the preliminary research plan and the results of the experimental tests/preliminary applications.	Assessment of the integration of the documentation of the data collected from the literature with the selected dissertation subject and assessment of the results of the experimental tests/preliminary applications.	50 %
10.6 Minimum standard of performance			
<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. 			



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11. Labels ODD (Sustainable Development Goals)²



Date:
...17.04.2025

Signature of course coordinator

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Signature of seminar coordinator

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Date of approval:
...24.04.2025

Signature of the head of department

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² Keep only the labels that, according to the [Procedure for applying ODD labels in the academic process](#), suit the discipline and delete the others, including the general one for *Sustainable Development* – if not applicable. If no label describes the discipline, delete them all and write „Not applicable.”.