

## COURSE DESCRIPTION

### *Speciality Practice*

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        | <b>Speciality Practice</b>       |               |   | Course code             | <b>CME7348</b>                         |
| 2.2. Course coordinator  | -                                |               |   |                         |  |
| 2.3. Seminar coordinator | A supervisor for each laboratory |               |   |                         |  |
| 2.4. Year of study       | II                               | 2.5. Semester | 4 | 2.6. Type of assessment | <a href="#">Exam</a>                   |
| 2.7. Course status       | <a href="#">Compulsory</a>       |               |   | 2.8. Course type        | <a href="#">Specialisation subject</a> |

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

|   |          |                       |  |                                   |              |
|---|----------|-----------------------|--|-----------------------------------|--------------|
| 3.1. Number of hours per week   | <b>7</b> | of which: 3.2. course |  | 3.3. seminar/ laboratory/ project | <b>7</b>     |
| 3.4. Total of hours in the curriculum   | 98       | of which: 3.5. course |  | 3.6. seminar/ laboratory          | <b>98</b>    |
| <b>Time allocation for individual study (IS) and self-taught activities (ST)</b>          |          |                       |  |                                   | <b>hours</b> |
| Learning from textbooks, course materials, bibliography, and notes (IS)                   |          |                       |  |                                   | 4            |
| Additional research in the library, on subject-specific electronic platforms, and on-site |          |                       |  |                                   | 2            |
| Preparing seminars/ laboratories/ projects, assignments, reports, portfolios, and essays  |          |                       |  |                                   | 18           |
| Tutoring (professional guidance)  |          |                       |  |                                   | -            |
| Examinations  |          |                       |  |                                   | 3            |
| Other activities  |          |                       |  |                                   | -            |
| <b>3.7. Total hours of individual study (IS) and self-taught activities (ST)</b>          |          |                       |  | <b>27</b>                         |              |
| <b>3.8. Total hours per semester</b>  |          |                       |  | <b>125</b>                        |              |
| <b>3.9. Number of credits</b>   |          |                       |  | <b>5</b>                          |              |

#### 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"> <li>• The students will attend the program of the internship specialized activities set up by the supervisor of the internship/ /laboratory/ scientific advisor of the dissertation.</li> <li>• The students will realize the documentation using the existing sources in the specialized libraries, in both the international electronic databases, and those provided by the scientific advisor of the dissertation.</li> <li>• The students will know the goals, means, instrumentation, and</li> </ul> |

|  |  |
|--|--|
|  | <p>stages of the laboratory works that they are going to do/attend.</p> <ul style="list-style-type: none"> <li>• The students will comply with the work safety and conduct norms in force with the laboratory/institution where they perform their internship.</li> <li>• The students will attend the laboratory with safety equipment (overall, gloves, goggles).</li> <li>• The students cannot perform their activities unattended in the internship site and cannot leave the premises unless the consent is given by the internship/laboratory supervisor /scientific advisor of the dissertation.</li> <li>• The papers will be delivered and defended to the scientific advisor of the dissertation</li> </ul> |
|--|--|

#### 6.1. Competencies resulting from the completion of the degree programme (as referred to in the curriculum)<sup>1</sup>

| Professional competencies |  |
|---------------------------|--|
| Competency code           | Competency   |
| PC1                       | Description, analysis and use of elaborate theories and concepts in the fields of chemistry and process advanced chemical engineering.   |
| 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.   |
| PC5                       | Identifying and defining a research theme in the field of chemical engineering process, elaboration and implementation of a plan for achieving the objectives proposed and valuing the scientific research results obtained.   |
| 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. |
| TC2                       | Planning, monitoring, and assuming the duties of a subordinate professional group. Demonstrating the capacity of coordination, analytical thinking, adaptability and flexibility, collaboration with team members.             |
| 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)<sup>2</sup>

| Learning outcomes targeted by the subject |  |   |
|---|--|---|
| Competency code                           | Knowledge and comprehension  | Specific academic skills  |
| PC2<br>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 |

<sup>1</sup> 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.

<sup>2</sup> 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.

|                    |   |   |
|--------------------|---|---|
| <b>PC6<br/>CT2</b> | 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

| <b>Knowledge and comprehension</b>  |
|---|
| 1. Ability to recognize the types of technologies in the chemical process engineering and the practical applications  |
| 2. Ability to use the modelling, simulation, and conduct of the pilot/industrial software applications.   |
| 3. Ability to use/ build the functional laboratory/pilot installations for various chemical processes.  |
| 4. Ability to select the most adequate synthesis way for a certain product.   |
| 5. Capacity to use the parameters of a pilot installation/technological process for the monitoring, automation, and optimization.   |
| <b>Specific academic skills</b>   |
| 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. Use of the specialized knowledge to performing the experimental activities.  |
| 3. Acquisition of the needed knowledge for collecting, interpreting, analysing and systematizing the experimental data.   |

## 8. Contents











| <b>8.1 Course</b>   | <b>Teaching and learning methods</b>                      | <b>Remarks</b> |
|---|---|----------------|
| -   |   |                |
| <b>8.2. Seminar/ laboratory</b>   | <b>Teaching and learning methods</b>                      | <b>Remarks</b> |
| 8.2 Laboratory - Specialized internship.<br>The activity will be organized on 3 modules, in three different laboratories at the Faculty of Chemistry and Chemical Engineering, or in a research institute of the "Babeş-Bolyai" University. | Teaching methods  | Remarks        |
| I. Active attendance to experiments developed in the profile laboratories in the area of the master program   | Laboratory 1  |                |
| 8.2.1. Active attendance to the preparation of the experimental activities (devices, glassware, reagents, computing systems and programs)   | Explanation; Conversation; Description; Conceptualization | 6              |
| 8.2.2. Active attendance to the achievement of the experimental activities specific to the laboratory where they are performed.   | Explanation; Conversation; Description; Conceptualization | 22             |
| 8.2.3. Active attendance to the analysis of the experimental data, processing the results and drawing up the conclusions.   | Explanation; Conversation; Description; Conceptualization | 4              |
| II. Active attendance to experiments developed in the profile laboratories in the area of the master program  | Laboratory 2  |                |
| 8.2.4. Active attendance to the preparation of the experimental activities (devices, glassware, reagents, computing systems and programs)   | Explanation; Conversation; Description; Conceptualization | 6              |
| 8.2.5. Active attendance to the achievement of the experimental activities specific to the laboratory where they are performed.   | Explanation; Conversation; Description; Conceptualization | 23             |
| 8.2.6. Active attendance to the analysis of the experimental data, processing the results and drawing up the conclusions.   | Explanation; Conversation; Description; Conceptualization | 4              |
| III. Active attendance to experiments developed in the profile laboratories in the area of the master program   | Laboratory 3  |                |
| 8.2.7. Active attendance to the analysis of the experimental data, processing the results and drawing up  | Explanation; Conversation; Description; Conceptualization | 6              |

|   |   |    |
|---|---|----|
| the conclusions.  |   |    |
| 8.2.8. Active attendance to the preparation of the experimental activities (devices, glassware, reagents, computing systems and programs) | Explanation; Conversation; Description; Conceptualization | 23 |
| 8.2.9. Active attendance to the achievement of the experimental activities specific to the laboratory where they are performed.           | Explanation; Conversation; Description; Conceptualization | 4  |
| Bibliography<br>Indicated by the scientific advisor of the dissertation (in accordance with the master program attended by the student).  |   |    |

## 9. Evaluation

| Type of activity   | 9.1 Evaluation criteria <sup>3</sup>  | 9.2 Evaluation methods <sup>4</sup> | 9.3 Percentage in the final grade |
|--|---|-------------------------------------|-----------------------------------|
| 9.4. Course  | -   | -                                   | -                                 |
| 9.5. Seminar/ laboratory   | Preparing a paper/book of the internship activity.  | Oral exam                           | 20 %                              |
|  | Activity during the internship – the mark will be granted by the supervisor of the laboratory where the internship is performed |                                     | 30%                               |
|  | Defending the exam  |                                     | 50 %                              |
| 9.6 Minimum standard for passing   |   |                                     |                                   |
| <ul style="list-style-type: none"><li>• The attendance to the at list 56 hours, the presentation of the internship activity, and the defence of the exam.</li><li>• The mark 5 (five) for the exam</li></ul> |   |                                     |                                   |

## 10. SDG labels (Sustainable Development Goals)<sup>5</sup>

|  |   |   |   |   |   |   |   |   |
|--|---|---|---|---|---|---|---|---|
|  | <input type="radio"/>   | Sustainable Development Generic Label   |   |   |   |   |   |   |
|  |  |  |  |  |  |  |  |  |
| <input type="radio"/>  | <input type="radio"/>   | <input type="radio"/>   | <input checked="" type="radio"/>  | <input type="radio"/>   | <input type="radio"/>   | <input type="radio"/>   | <input type="radio"/>   | <input type="radio"/>   |

<sup>3</sup> 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.

<sup>4</sup> Both final evaluation methods and ongoing evaluation strategies should be established.

<sup>5</sup> 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

A supervisor for each laboratory

A supervisor for each laboratory

Date of approval in the department:  
29.04.2026

Signature of the head of department

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