

COURSE DESCRIPTION

Quality and Process Design Management

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	Quality and Process Design Management			Course code	CME7341
2.2. Course coordinator	Assoc. Prof. Dr. Eng. Elisabeta Cristina Timis				
2.3. Seminar coordinator	Assoc. Prof. Dr. Eng. Elisabeta Cristina Timis				
2.4. Year of study	II	2.5. Semester	3	2.6. Type of assessment	Progress check
2.7. Course status	Optional		2.8. Course type	Specialisation subject	

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

3.1. Number of hours per week	4	of which: 3.2. course	2	3.3. laboratory	2
3.4. Total of hours in the curriculum	56	of which: 3.5. course	28	3.6. laboratory	28
Time allocation for individual study (IS) and self-taught activities (ST)					hours
Learning from textbooks, course materials, bibliography, and notes (IS)					28
Additional research in the library, on subject-specific electronic platforms, and on-site					16
Preparing laboratories/ projects, assignments, reports, portfolios, and essays					18
Tutoring (professional guidance)					4
Examinations					3
Other activities					-
3.7. Total hours of individual study (IS) and self-taught activities (ST)				69	
3.8. Total hours per semester				125	
3.9. Number of credits				5	

4. Prerequisites

4.1. curriculum-related	Not the case
4.2 skills-related	The use of Microsoft Office English language knowledge

5. Specific conditions

5.1. course-related	<ul style="list-style-type: none"> The course room must facilitate video-projection. The course may take place on site or online, employing Microsoft Teams in the limits allowed by the University regulations. Students must switch off the mobile phones during courses. Audio and/or video recording during the course is not allowed. Students are allowed to enter and exit at the courses anytime according to their needs, without disturbing the ongoing activities.
5.2. seminar-related	<ul style="list-style-type: none"> The seminar room must facilitate video-projection. The seminar activities may take place on site or online, employing Microsoft Teams, in the limits allowed by the university regulations.

	<ul style="list-style-type: none"> Students should switch off the mobile phones during laboratories. Audio and/or video recording during the laboratory is not allowed. Students should be present at the laboratories, as they are compulsory according to Art. 29 of "Statutul Studentului din Universitatea Babes-Bolyai", revised at 13.01.2013. The deadline for presenting the homework/projects will be agreed between the lecturer and the students and tasks will be posted as Microsoft Teams Assignments. Delays are accepted in the cases when well-founded reasons are proven before the deadline. In case of presenting the homework with delay, the grade will be penalized (0.25p/day).
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6.1. Competencies resulting from the completion of the degree programme (as referred to in the curriculum)

Professional competencies	
Competency code	Competency
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
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)

Learning outcomes targeted by the subject		
Competency code	Knowledge and comprehension	Specific academic skills
PC6 TC2	Knowledge of concepts and theories specific to resources and quality management for process engineering, in the context of sustainable development.	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.
PC5 PC6 TC2 TC3	Knowledge of scientific research strategies, setting the program of experiments and simulations, explanation and interpretation of the results for the elaboration of research projects.	Use of fundamental and applied concepts of scientific investigation in order to develop research projects for the development of new products/technologies with practical applications.

7. Subject-specific learning outcomes

Knowledge and comprehension
1. Explain core concepts, terminology and frameworks of project management, process management and quality management in process engineering, including the project life cycle and key project documents (charter/ roadmap/ proposal).
2. Describe and justify systemic resource management in projects (human resources, budget, communication, risk and quality assurance), in relation to sustainable development requirements.
3. Explain the principles of quality management systems (QMS), including standardization, certification and auditing, and the structure of ISO-type documentation (manual, procedures, SOPs).
4. Describe the specificity of research/innovation projects in industry and academia, including funding logic and proposal-oriented planning, and how results are valorised.
Specific academic skills
1. Develop a project plan for a low-complexity engineering case, including stakeholder analysis (e.g., SWOT), scope/objectives, WBS/work packages, activities, milestones, deliverables and scheduling (Gantt, PERT/CPM).
2. Elaborate and justify the budget, the plans for resource, risk and communication, including quality assurance and reporting elements, using appropriate digital tools.

3. Design and implement project deliverables and quality/process management deliverables, such as process maps and Standard Operating Procedures (SOPs), aligned with QMS and auditing logic.
4. Apply qualitative and quantitative analysis tools for quality control and continuous improvement (e.g., control charts, RCA, benchmarking; Lean/5S/Six Sigma/Kaizen) to identify root causes and propose corrective and preventive actions.
5. Communicate and defend solutions professionally and ethically, through structured reports and oral presentations (primarily in English), demonstrating teamwork, feedback and self-evaluation for continuous learning.

8. Contents

8.1. Course	Teaching and learning methods	Remarks
8.1.1. Pre-course assessment survey. Project management, process management and quality management. Introduction.	Lecture, explanation, exemplification, conversation, description, problem-based learning, and debate	
8.1.2. Project concept. Specific elements of a project. Project types. Project context. Organization/ company structure. Stakeholders, clients, customers, users.	Lecture, explanation, exemplification, conversation, description, problem-based learning, and debate	
8.1.3. Project life cycle and project phases. Overview of project-specific documents: project charter, project roadmap and project proposal.	Lecture, explanation, exemplification, conversation, description, problem-based learning, debate and students' presentations	
8.1.4. Initiation/definition phase: project charter (including project scope, objective setting).	Lecture, explanation, exemplification, conversation, description, problem-based learning, debate and students' presentations	
8.1.5. Methodological aspects of project planning. Planning phase: work breakdown, development of work packages, activities, milestones, deliverables, project scheduling (Gantt Chart, PERT, CPM).	Lecture, explanation, exemplification, conversation, description, problem-based learning, debate and students' presentations	
8.1.6. Planning phase (continued): resource management (including human resources), project budget; risk management, communication plan, quality assurance, evaluation and reporting.	Lecture, explanation, exemplification, conversation, description, problem-based learning, debate and students' presentations	
8.1.7. Implementation/ execution phase: coordination, evaluation, quality assurance, project closure, and a practical example of industrial project implementation.	Lecture, explanation, exemplification, conversation, description, problem-based learning, debate and students' presentations	
8.1.8. Implementation phase (continued): coordination, evaluation, quality assurance, project closure, and a practical example of industrial project implementation.	Lecture, explanation, exemplification, conversation, description, problem-based learning, debate and students' presentations	
8.1.9. Research projects in industry and academia. Industry-academia cooperation in research projects. Research project funding.	Lecture, explanation, exemplification, conversation, description, problem-based learning, debate and students' presentations	
8.1.10. Standardization and certification authorities: international and national. Standardization. Quality management systems. Auditing.	Lecture, explanation, exemplification, conversation, description, problem-based learning, debate and students' presentations	
8.1.11. Implementation of a quality management system. ISO 9000 family of standards.	Lecture, explanation, exemplification, conversation, description, problem-based learning, debate and students' presentations	
8.1.12. ISO documentation: quality manual, specific standards, standard operating procedures.	Lecture, explanation, exemplification, conversation, description, problem-based learning, debate and students' presentations	
8.1.13. Process management: process concept, process maps, the use of standard operating procedures. Methods for quality control.	Lecture, explanation, exemplification, conversation, description, problem-based learning, debate and students' presentations	
8.1.14. Continuous improvement tools: Control Charts, Root Cause Analysis (RCA), Benchmarking. Methodologies and continuous improvement tools: e.g., World Class Manufacturing (WCM), 5S, Six Sigma, Kaizen, Lean.	Lecture, explanation, exemplification, conversation, description, problem-based learning, debate and students' presentations	
Bibliography		
1. Timis, E.C., 2026, Quality and Process Design Management: Microsoft PowerPoint slide show performed during course classes.		
2. Breyfogle, F.W., 2003. Implementing Six Sigma: smarter solutions using statistical methods, 2nd Edition, John Wiley & Sons. https://www.mdthinducollege.org/ebooks/statistics/Implementing_Six_Sigma.pdf (accessed on 9.04.2024)		
3. Farag, A., 2023. Essentials of Project Management, Fanshawe College Pressbooks, London, Ontario, pp. 312.		

- <https://ecampusontario.pressbooks.pub/essentialsofprojectmanagement/>
4. Ferguson, C., 2011. PRINCE2 for small-scale projects, The Stationery Office, <https://www.qrpinternational.be/wp-content/uploads/sites/7/2017/06/PRINCE2-for-Small-Scale-Projects.pdf> (accessed on 9.04.2024)
 5. Guvernul României, 1998. Manualul de management al proiectelor. <http://reteafomare-aplvs.ro/wp-content/uploads/2015/07/Manual-Managementul-de-proiect.pdf> (accessed on 9.04.2024)
 6. Heagney, J., 2016. Fundamentals of project management 5th Edition, Amacom, American Management Association. <https://vuthedudotorg.files.wordpress.com/2015/10/fundamentals-of-project-management-0814437362.pdf>
 7. Heinze, A., 2009. Research Project Management Course. University of Salford, <https://www.slideshare.net/AleksejHeinze/research-project-management-161009> (accessed on 9.04.2024)
 8. Ilieș, L. and Crișan, E., 2011. Managementul calității totale, Editura Risoprint, Cluj-Napoca, 2011.
 9. International Six Sigma Institute, 2019. Six Sigma Revealed, 2nd Edition. https://www.sixsigma-institute.org/contents/Six_Sigma_Revealed_by_International_Six_Sigma_Institute.pdf (accessed on 9.04.2024)
 10. ISO: the International Organization for Standardization, ISO 9001:2015 Quality management systems. Requirements. <https://www.iso.org/obp/ui/en/#iso:std:iso:9001:ed-5:v1:en> (accessed on 9.04.2024)
 11. ISO, 2017. The process approach in ISO 9001:2015. https://www.iso.org/iso/iso9001_2015_process_approach.pdf (accessed on 9.04.2024)
 12. ISO 21502:2020 Project, programme and portfolio management. Guidance on project management. <https://www.iso.org/obp/ui/en/#iso:std:iso:21502:ed-1:v1:en> (accessed on 9.04.2024)
 13. ISO 21500:2021 Guidance on Project Management. Project, programme and portfolio management. Context and concepts <https://www.iso.org/obp/ui/en/#iso:std:iso:21500:ed-2:v1:en> (accessed on 9.04.2024)
 14. Luong, L., (Ed.) 2013. Project Management 101, CONNEXIONS, Rice University, Houston, Texas, <https://cnx.org/contents/UwGX6YvX@1.12:nYhV-4VB@4/Becoming-an-Accidental-Project-Manager> (accessed on 9.04.2024)
 15. Notargiacomo Mustaro, P, Rossi, R., 2013. Project Management Principles Applied in Academic Research Projects, Issues in Informing Science and Information Technology, 10, 325-340, <http://iisit.org/Vol10/IISITv10p325-340Mustaro0190.pdf> (accessed on 9.04.2024)
 16. Ministerul Dezvoltării Regionale și Administrației Publice, 2015. Ghid de bune practici în management de proiect. https://www.mdipa.ro/userfiles/ghid_MP.pdf (accessed on 9.04.2024)
 17. Murray A., 2009. Managing and Directing Successful Projects with PRINCE2™, Outperform. <https://pbcdata.files.wordpress.com/2011/03/managing-and-directing-successful-projects-with-prince2.pdf> (accessed on 9.04.2024)
 18. Pearson N., Larson E.W., Gray, C.F., 2018. Project Management in Practice for Certificate IV and Diploma 2nd Edition. McGraw Hill Education. https://archive.org/details/neil-pearson-erik-w.-larson-clifford-f.-gray-pack-project-management-in-practice_202204
 19. Project Management Institute, 2021. A Guide to the Project Management Body of Knowledge (PMBOK® GUIDE), 7th Edition, PMI Book Service Center, Pennsylvania, USA. [https://ibimone.com/PMBOK%207th%20Edition%20\(iBIMOne.com\).pdf](https://ibimone.com/PMBOK%207th%20Edition%20(iBIMOne.com).pdf) (accessed on 9.04.2024)
 20. Project Management Institute, <https://www.pmi.org/pmbok-guide-standards> (accessed on 9.04.2024)
 21. Russel, J.P., 2009. Process Auditing Techniques, JP Russel and Associates, QualityWBT.com. <https://www.qualitywbt.org/flextraining/asp/content/guide/a14/pdfs/deskrefa14.pdf> (accessed on 9.04.2024)
 22. Schoonman, M., 2011. Practical Project Management - full course, <https://www.slideshare.net/martenschoonman/practical-project-management-full-course> (accessed on 9.04.2024)
 23. The Stationery Office, 2009. Managing successful projects with PRINCE2. <https://nucleoapolo.ufpr.br/download/wp-content/uploads/2019/02/PRINCE2-2009-remarks.pdf> (accessed on 9.04.2024)
 24. Six Sigma: A Complete Step-by-Step Guide, 2018. Six Sigma: A Complete Step-by-Step Guide. <https://www.sixsigmacouncil.org/wp-content/uploads/2018/08/Six-Sigma-A-Complete-Step-by-Step-Guide.pdf> (accessed on 9.04.2024)
 25. Vitkovic, R., What is World Class Manufacturing? Chamber of Commerce and Industry of Slovenia. <https://www.gzs.si/Portals/183/vsebine/dokumenti/Radovan%20Vitkovi%C4%87%20-%20World%20Class%20Manufacturing.pdf> (accessed on 9.04.2024)
 26. Watt, A., 2019. Project Management, BCcampus Open Education, <https://opentextbc.ca/projectmanagement/front-matter/accessibility-statement/> (accessed on 9.04.2024)
 27. American Society for Quality (ASQ), <https://asq.org/quality-resources/quality-management-system>
 28. SYSTEMICO - Systems Thinking. Process Excellence. Sustainable Results, <https://www.systemico.ca/quality-and-risk-management/quality-management-system-qms/>

Note. Bibliography items may be found at one of the following: (1) the "Lucian Blaga" Central Library of Babes-Bolyai University; (2) online on the scientific databases available from the intranet of Babes-Bolyai University and "Lucian Blaga" Central Library; (3) online using specified links; (4) online on the Microsoft Teams group dedicated to the discipline.





































8.2. Seminar	Teaching and learning methods	Remarks
8.2.1. Develop project planning elements: Stakeholder identification. SWOT analysis.	Explanation, conversation, description, problem-based learning, teamwork, and student presentations	
8.2.2. Develop project planning elements: Project charter	Explanation, conversation, description, problem-based learning, teamwork, and student presentations	
8.2.3. Develop project planning elements: work breakdown structure, work packages, activities.	Explanation, conversation, description, problem-based learning, teamwork, and student presentations	
8.2.4. Develop project planning elements: activity conditionality, milestones, project deliverables, project deliverables.	Explanation, conversation, description, problem-based learning, teamwork, and student presentations	
8.2.5. Develop project planning elements: project scheduling (e.g. Gantt chart, PERT chart and/or CPM).	Explanation, conversation, description, problem-based learning, teamwork, and student presentations	
8.2.6. Develop project planning elements: resource management.	Explanation, conversation, description, problem-based learning, teamwork, and student presentations	
8.2.7. Develop project planning elements: project budget.	Explanation, conversation, description, problem-based learning, teamwork, and student presentations	
8.2.8. Develop project planning elements: risk management plan.	Explanation, conversation, description, problem-based learning, teamwork, and student presentations	
8.2.9. Implement quality and process management elements: evaluation, quality assurance.	Explanation, conversation, description, problem-based learning, teamwork, and student presentations	
8.2.10. Implement quality and process management elements: identifying sources of funding for research projects.	Explanation, conversation, description, problem-based learning, teamwork, and student presentations	
8.2.11. Implement quality and process management elements: understanding and implementing standards.	Explanation, conversation, description, problem-based learning, teamwork, and student presentations	
8.2.12. Implement quality and process management elements: standard operating procedures.	Explanation, conversation, description, problem-based learning, teamwork, and student presentations	
8.2.13. Implement quality and process management elements: process maps.	Explanation, conversation, description, problem-based learning, teamwork, and student presentations	
8.2.14. Implement elements related to quality and process management, according to the details provided in the course: continuous improvement methodologies and techniques.	Explanation, conversation, description, problem-based learning, teamwork, and student presentations	
Bibliography 1. All course bibliography 2. Auckland University, https://www.auckland.ac.nz/en/education/study-with-us/study-options/doctoral-programmes/research-proposal-structure.html 3. Becker, M., Schütt, B., Amini S., Stumptner, A., Ripken, C., 2014. Proposal Writing for International Research Projects. A Guide for Teachers. DAAD, https://www.fu-berlin.de/sites/china/aktuelles/aktuelle-artikel/20171205_Research-Proposal-Writing-Workshop/Research-ProposalWriting-2014_Becker-Schuett-Amini_-Workshop-Beijing-FUB-CSC-PhD-Program_Nov_2017-1.pdf 4. British Council, Writing for a Purpose – help with writing in English Proposals: Structure, https://learnenglish.britishcouncil.org/writing-purpose/proposals-structure Research Reports, https://learnenglish.britishcouncil.org/writing-purpose/research-reports 5. Kepa, 2020. Development Cooperation Project Cycle Management, Finland, https://itseopiskelu.kepa.fi/en/node/479 6. Monash University, https://www.monash.edu/rlo/graduate-research-writing 7. Project Management Institute, https://www.pmi.org/learning/tools-templates 8. https://www.wrike.com/project-management-guide/faq/what-is-a-project-charter-in-project-management/		

9. <https://www.smartsheet.com/content/project-management-meeting-minutes-templates>
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9. Evaluation

Type of activity	9.1 Evaluation criteria	9.2 Evaluation methods	9.3 Percentage in the final grade
9.4. Course	<p>For at least one exercise (case study) in project management or quality management, the following are evaluated:</p> <ul style="list-style-type: none"> • The extent to which the course knowledge has been acquired; • The critical thinking process, the accuracy, and the substantiation of the solutions; • The content of the presentation, the relevance, and the comprehensiveness of the information regarding the addressed problem; • The organization and structure of the information; • The delivery and professional style of the presentation. 	<p>Progress Check (VP)</p> <p>Oral assessment conducted on-site or online via the Microsoft Teams platform, in accordance with university regulations.</p> <p>Specific instructions for the preparation of examination materials will be provided to students at the beginning of the semester.</p> <p>The exercise will be presented during a scheduled session throughout the semester, following the guidelines provided at the start of the course. Each student is required to deliver at least one presentation. Depending on the circumstances, an additional presentation may be held with the prior approval of the course coordinator.</p>	50%
9.5. Laboratory	<p>The accuracy of the answers, to verify the acquisition and correct understanding of the topics addressed during the seminars.</p> <p>Active participation in seminar discussions.</p> <p>The quality of the materials presented for homework assignments, proposed seminar problems, teamwork exercises, etc.</p>	<p>Progress Check (VP)</p> <p>Oral evaluation based on seminar activity and individual or team assignments.</p> <p>This may be conducted on-site or online via the Microsoft Teams platform, in accordance with university regulations.</p> <p>Specific instructions for the preparation of examination materials will be communicated to students at the beginning of the semester.</p> <p>Each student is required to deliver at least one presentation.</p>	50%
9.6 Minimum standard for passing			
<ul style="list-style-type: none"> • The capacity to understand key project and quality management elements, and the ability to use it in developing specific case studies. • Capability to present and critically analyse own approach related to solving tasks related to project and quality management. • The use of computer and English language for continuous learning. • 5 is the minimum grade accepted to pass the evaluation. • The consequence of the attempted fraud and / or plagiarism are followed by the exclusion of the student from the exam. 			

10. SDG labels (Sustainable Development Goals)

		Sustainable Development Generic Label						
								
								X
								No label applies
								

Date of entry:
23.04.2026

Signature of course coordinator

Signature of seminar coordinator

Assoc. Prof. Dr. Ing. Elisabeta Cristina Timiș

Assoc. Prof. Dr. Ing. Elisabeta Cristina Timiș

Date of approval in the department:
29.04.2026

Signature of the head of department

Prof. Dr. Ing. Graziella Liana Turdean