POZNAN UNIVERSITY OF TECHNOLOGY

COURSE DESCRIPTION CARD - SYLLABUS

Course name
Quality improvement tools [S1IBiJ1>NDJ]

Course

Field of study	Year/Semester
Safety and Quality Engineering	3/6
Area of study (specialization)	Profile of study
–	general academic
Level of study	Course offered in
first-cycle	Polish
Form of study	Requirements
full-time	compulsory

Number of hours

Lecture	Laboratory classes	Other
15	0	0
Tutorials	Projects/seminars	
15	0	

Number of credit points

2,00

Coordinators

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Lecturers

Prerequisites

Knowledge and skills related to engineering aspects of the quality of products, processes and systems.
Knowledge of the basics of quality management, knowledge of the essence, principles and methods of
product quality control.

Course objective

Providing students with knowledge and skills related to organizational improvement issues. To familiarize
students with quality management tools that can be used when designing processes, examining quality
dependencies in processes, identifying the causes of non-compliance and planning improvement activities.

Course-related learning outcomes

Knowledge:
1. The student has advanced knowledge of issues related to the identification, analysis and assessment

of risk in the context of quality [K1_W03].
2. The student knows issues related to the use of quality improvement tools and knows how they are related to the quality level of products and processes [K1_W07].

Skills:
1. The student is able to use appropriate quality management tools to design a selected production process, is able to select quality management tools to solve various quality-related problems, having seven old and seven new tools at his disposal [K1_U07].
2. The student is able to apply standards that define the procedure in the production process analyzed during the exercises [K1_U08].
3. The student, individually or in a team, is able to simulate the process of identifying threats in the process, look for causes, propose improvement actions and then, as a result of the simulation, evaluate the results after implementing these actions and draw conclusions [K1_U11].

Social competences:
1. The student notices cause-and-effect relationships, is able to define priorities while pursuing goals in tasks and projects [K1_K01].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Tutorials:
Formative assessment: ongoing assessment of the tasks performed. For each task the student receives the number of points specified in the conditions for passing the task. It is possible to complete the task with a minimum of 51% of the points.
Summative assessment: each task must be passed for a minimum of 51%, the sum of points obtained for each task is converted into a grade. The grade is entered according to the following rules: 96 - 100 points - Very Good; 84 - 95 points - Good plus; 73 - 83 points - Good; 61 - 72 points - Satisfactory plus; 51- 60 points - Satisfactory; 00 - 50 points - Unsatisfactory.
Lecture:
Formative assessment: answers to questions about the content of previous lectures,
Summative assessment: Test of the knowledge provided during the lectures, scored on a two-point scale 0, 1. Passing point: 51% of points.

Programme content

Program content includes topics related to issues of improvement in organizations, particularly the practical aspects of applying quality management tools used in process design, examining quality dependencies in processes, identifying causes of nonconformities, and planning improvement actions.

Course topics

The lecture program covers the following topics: The essence of improvement in organizations. Philosophies and models of improvement. Basics of the Kaizen approach, Deming's continuous improvement cycle, benchmarking, process reengineering. Theoretical aspects of using improvement tools in quality improvement.
Tutorials: Tools used to visualize quality problems: flowchart, process map, control sheet, arrow diagram - examples. Tools used to identify the causes and effects of quality problems: Ishikawa diagram, relationship diagram, matrix diagram, relationship diagram - examples. Tools used to determine quality problems, e.g. Pareto-Lorenc diagram. Tools used to study the relationship between factors influencing quality: matrix data analysis, point correlation diagram. Action planning tools: error tree, program chart of the decision-making process.

Teaching methods

Lecture: information lecture, problem lecture, work with a book, lecture.
Tutorials: lecture with explanation and clarification, case study, brainstorming, solving problem tasks presented by the lecturer.

Bibliography

Basic:

Antosz K., Carlos Sa J., Jasiulewicz-Kaczmarek M., Machado J., Lean Thinking in Industry 4.0 and Services for Society, Wydawnictwo IGI Global, 2023 - 312 s.

Mazur A., Siedem tradycyjnych i siedem nowych narzędzi zarządzania jakością, Wydawnictwo Politechniki Poznańskiej, Poznań, 2023.

Mazur A., Quality management, Wydawnictwo Politechniki Poznańskiej, Poznań, 2022.

Mazur A., Gołaś H., Zasady, metody i techniki wykorzystywane w zarządzanie jakością, Wydawnictwo Politechniki Poznańskiej, ISBN 978-83-7143-908-7, Poznań 2010, s. 113.

Mazur A., Małecka J., Kompleksowe wykorzystanie metod i narzędzi jakości w FMEA procesu, Problemy Jakości 07/2019, s. 14-19.

Prussak W., Jasiulewicz-Kaczmarek M., Elementy inżynierii systemów zarządzania jakością, Wydawnictwo Politechniki Poznańskiej, Poznań 2010.

Additional:

Gołaś H., Mazur A., Piasek P., Czajkowski P., Zastosowanie standaryzacji w procesie kontroli jakości wyrobów, Problemy Jakości 2/2017, s. 10-14.

Zymonik Z., Hamrol A., Grudowski P., Zarządzanie jakością i bezpieczeństwem Polskie Wydawnictwo Ekonomiczne, 2013.

Breakdown of average student's workload

	Hours	ECTS
Total workload	50	2,00
Classes requiring direct contact with the teacher	33	1,50
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	17	0,50