COURSE DESCRIPTION CARD - SYLLABUS

Course name
Quality Management [S1IZarz1>ZJ]

Course

Field of study
Engineering Management

Year/Semester
3/5

Area of study (specialization)
–

Profile of study
general academic

Level of study
first-cycle

Course offered in
polish

Form of study
full-time

Requirements
compulsory

Number of hours

Lecture
15

Laboratory classes
0

Other (e.g. online)
0

Tutorials
15

Projects/seminars
15

Number of credit points

4,00

Coordinators

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Lecturers

Prerequisites

Basic knowledge of technical issues, statistics and work organization.

Course objective

Acquiring knowledge and skills related to engineering aspects of product and process quality, in particular regarding quality evaluation, methods of product quality control as well as critical process control points and their supervision.

Course-related learning outcomes

Knowledge:
The student discusses basic concepts related to quality, including the definition, qualitative characteristics of products and processes, and principles of quality management [P6S_WG_14].
The student describes the product life cycle in the context of quality management, covering design, manufacturing, operation, and disposal of the product [P6S_WG_15].
The student presents methods of quality assessment and analysis, including quality control and management, and tools for visualizing and determining the causes and effects of quality problems

[P6S_WG_16].
The student identifies quality management standards and norms and discusses their application in practice [P6S_WG_17].

Skills:
The student applies traditional quality management tools, including process diagrams, Ishikawa diagrams, and Pareto-Lorenz diagrams, to analyze and present manufacturing processes [P6S_UW_08].
The student identifies and analyzes causes of non-conformities in manufacturing processes, using appropriate quality tools [P6S_UW_11].
The student utilizes histograms and scatter diagrams to present results achieved in the process [P6S_UW_13].
The student designs and implements quality management systems, based on theoretical knowledge and practical tools [P6S_UW_14].

Social competences:
The student recognizes cause-and-effect relationships in quality management and applies them to managerial decision-making [P6S_KK_02].
The student contributes substantively to projects related to quality management, considering legal, economic, and organizational aspects [P6S_KO_01].
The student is aware of the significance of quality management for organizational efficiency and responsibility for decisions made [P6S_KR_01].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Formative assessment:
a) tutorials: assessment of the current progress in the implementation of tasks
b) lectures: answers to questions about the content of previous lectures,
c) project: assessment of the current progress of the project task implementation
Summative assessment:
a) tutorials: evaluation of partial exercises into points, conversion of points into the final grade.
b) lectures: Colloquiums consist of 20-30 (test) questions, scored on a two-level scale of 0, 1. Passing point: 50% of points. Passing issues, on the basis of which the questions are developed, are based on the content provided to students during lectures and additional materials indicated by the teacher.
c) project: design task presented to the tutor and its presentation

Programme content

Lecture:
Basic concepts related to quality (definition, quality features of products and processes). Quality throughout the life of the product (design, manufacture, operation and disposal of the product). Rating and quality analysis. Quality control and control. Tools for visualization, determining the causes and effects and determining the importance of problems affecting the quality of products. Principles of quality management, norms and standards of quality management
Tutorials:
Use of seven old (traditional) quality management tools. Application of a process diagram to present the course of production processes. Analysis of the causes of inconsistencies in the process using the Ishikawa diagram. Identification of root causes using the Pareto-Lorenz diagram. Presentation of the results achieved in the process using a histogram and a scatter diagram (scatter plot of correlation). Process flow and results analysis with the use of a check sheet and statistical process control.
Project:
Practical application of seven new quality management tools: relationship diagram, relationship diagram, matrix data analysis, matrix diagram, arrow diagram, decision tree, software diagram of the decision process.

Teaching methods

1) Lecture: multimedia presentation, illustrated with examples given on the blackboard.
2. Exercises: a multimedia presentation, a presentation illustrated with examples given on the blackboard and the implementation of tasks given by the teacher - practical exercises.

3) Project: multimedia presentation illustrated with examples given on the board and discussion of the concept of possible solutions to the design task.

Bibliography

Basic:
Mazur A., Quality Management, Wydawnictwo Politechniki Poznańskiej, Poznań, 2022, 216 s.
Mazur A., Gołaś H., Zasady, metody i techniki wykorzystywane w zarządzaniu jakością, Wydawnictwo Politechniki Poznańskiej, Poznań, 2010, 112 s.
Prussak W., Jasiulewicz-Kaczmarek M., Elementy inżynierii systemów zarządzania jakością, Wydawnictwo Politechniki Poznańskiej, Poznań 2010.
Sałaciński T., Inżynieria jakości w technikach wytwarzania. Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa 2016.
Hamrol A.: Zarządzanie i inżynieria jakości. WN PWN, Warszawa 2017.
Mazur A., Siedem tradycyjnych i siedem nowych narzędzi zarządzania jakością, Wydawnictwo Politechniki Poznanskiej, Poznań, 2023, 112 s.
PN-EN ISO 9000:2015 Systemy Zarządzania Jakością. Podstawy i Terminologia, Wydawnictwo PKN, Warszawa, 2016.

Additional:
Grudowski P., Przybylski W., Siemiątkowski M.: Inżynieria jakości w technologii maszyn. Wydawnictwo Politechniki Gdańskiej, Gdańsk 2006.
Mazur A., Barcka A., Chwalna J., Standaryzacja działań jako metoda doskonalenia na przykładzie przedsiębiorstwa produkcyjnego, Problemy Jakości - 2021, nr 11-12, s. 28-34.
Gołaś H., Mazur A., Piasek P., Czajkowski P., Zastosowanie standaryzacji w procesie kontroli jakości wyrobów, Problemy Jakości - 2017, nr 2, s. 10-14.

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
Classes requiring direct contact with the teacher	45	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	55	2,00