



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Quality management [S1DSwB1>ZJ]

Course

Field of study

Data Science in Business

Year/Semester

2/4

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

0

Tutorials

15

Projects/seminars

15

Number of credit points

4,00

Coordinators

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Lecturers

Prerequisites

The student possesses basic knowledge of management and business process organization. They understand fundamental concepts related to the functioning of enterprises and the basics of process management. They can analyze and interpret data related to organizational performance. Additionally, the student demonstrates the ability to work in a group, is systematic, and has the capacity for logical thinking and problem-solving. A basic knowledge of data analysis methods and the interpretation of statistical charts is also welcome.

Course objective

The objective of the course is to introduce students to foundational knowledge concerning quality management in organizations, the perception of quality, and to develop skills in addressing practical quality management challenges.

Course-related learning outcomes

Knowledge:

Characterizes basic concepts related to quality management and the principles of its evolution and development in the context of quality standards and norms [DSB1_W10].

Identifies basic quality management tools and determines their application in process analysis and optimization [DSB1_W07].

Explains the use of statistical quality control methods and their role in monitoring and improving processes within an organization [DSB1_W01].

Skills:

Applies quality management tools, such as the Ishikawa diagram, histogram, and Pareto-Lorenzo diagram, to analyze and identify quality issues within an organization [DSB1_U04].

Creates process diagrams and uses statistical quality control techniques to monitor and optimize production processes [DSB1_U07].

Utilizes matrix data analysis, relationship diagrams, and decision trees to support quality management processes and decision-making [DSB1_U10].

Interprets the results of quality analyses and formulates recommendations for process improvement [DSB1_U05].

Selects appropriate quality management tools and applies them to assess the effectiveness of organizational processes [DSB1_U06].

Designs and implements new quality management tools, including relationship diagrams, affinity diagrams, and matrix diagrams, to analyze and optimize decision-making processes [DSB1_U08].

Social competences:

Considers quality aspects when making business decisions, ensuring that processes comply with quality norms and standards [DSB1_K05].

Collaborates in project teams to implement and optimize quality management systems, using process analysis tools [DSB1_K02].

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Formative Assessment:

LECTURE: Students are encouraged to actively engage in the lecture. For each meaningful contribution, they receive one point, which is incorporated into their final test score.

TUTORIALS: Continuous evaluation of the student's progress. Students complete three exercises, earning a designated number of points for each one.

PROJECT: Continuous assessment of the progress in fulfilling the project task. The project is divided into two stages, with students earning a specified number of points for each stage.

Summative Assessment:

LECTURE: The colloquium consists of 20-30 questions (multiple-choice), scored on a two-point scale (0, 1). The passing threshold is 51% of the points. The qualifying topics, based on which the questions are developed, are derived from the content presented to students during lectures and additional materials indicated by the instructor.

TUTORIALS: Conversion of points earned by students into a final grade based on the following scale: 90 - 100 points - Very Good, 80 - 89 points - Good plus, 70 - 79 points - Good, 62 - 70 points - Satisfactory plus, 53 - 61 points - Satisfactory, 0 - 52 points - Unsatisfactory

PROJECT: Presentation of the project task during class and providing oral answers within the scope of understanding the principles and tools of quality management. Conversion of points earned for each project stage based on the following scale: 90 - 100 points - Very Good, 80 - 89 points - Good plus, 70 - 79 points - Good, 62 - 70 points - Satisfactory plus, 53 - 61 points - Satisfactory, 0 - 52 points - Unsatisfactory.

Programme content

The program covers both theoretical and practical issues related to the topic of quality management in an enterprise.

Course topics

Lecture Program:

The lecture program covers the following topics: basic concepts related to quality. Evolution in the approach to quality. Principles of quality management. Quality management norms and standards.

Tutorials Program:

The tutorials program covers the following topics: utilization of the seven old (traditional) tools of quality management. Application of a process diagram to present the flow of production processes. Analysis of nonconformity causes in the process using an Ishikawa diagram. Identification of root causes using a Pareto-Lorenz diagram. Presentation of results achieved in the process using a histogram and a scatter plot (correlation point chart). Analysis of the process flow and results using a control chart and statistical process control.

Project Program:

The project program covers the following topics: practical application of the seven new tools of quality management: relationship diagram, affinity diagram, matrix data analysis, matrix diagram, arrow diagram, decision tree, and a program chart for decision-making process.

Teaching methods

Lecture: Multimedia presentation illustrated with examples presented on the board.

Exercises: Practical exercises, case studies, workshop method, problem-solving.

Project: Multimedia presentation illustrated with examples presented on the board, along with a discussion of potential solution concepts for the project task.

Bibliography

Basic:

Gołaś H., Mazur A., Zarządzanie jakością, Wydawnictwo Politechniki Poznańskiej, Poznań, 2011, 156 s.

Hamrol A.: Zarządzanie i inżynieria jakości. WN PWN, Warszawa 2017

Mazur A., Siedem tradycyjnych i siedem nowych narzędzi zarządzania jakością, Wydawnictwo Politechniki Poznańskiej, Poznań, 2023, 112 s.

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.

PN-EN ISO 9000:2015 Systemy Zarządzania Jakością. Podstawy i Terminologia, Wydawnictwo PKN, Warszawa, 2016.

Śalaciński T., Inżynieria jakości w technikach wytwarzania. Oficyna Wydawnicza Politechniki Warszawskiej, 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	47	2,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	53	2,00