



## COURSE DESCRIPTION CARD - SYLLABUS

Course name

Quality management

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### Course

Field of study

Engineering Management

Area of study (specialization)

Level of study

First-cycle studies

Form of study

full-time

Year/Semester

3/5

Profile of study

general academic

Course offered in

English

Requirements

compulsory

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### Number of hours

Lecture

15

Tutorials

15

Laboratory classes

Projects/seminars

15

Other (e.g. online)

### Number of credit points

4

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### Lecturers

Responsible for the course/lecturer:

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Responsible for the course/lecturer:

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## 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 current progress of task implementation
- b) lectures: answers to questions about the content of previous lectures,
- c) project: evaluation of the current progress of the project task implementation.

Summative rating:

- a) tutorials: presentation of reports on exercises performed (arithmetic average of partial grades);
- b) lectures: The pass a test questions, scored on a two-point scale of 0, 1. Passing threshold: 50% of the points.
- c) Project: project task and presentation

### Programme content

Lecture:

Basic concepts related to quality, product quality features, quality engineering in product design, manufacture, operation and utilization, quality assessment and analysis, quality control and control, tools and methods of quality control and SKO and SPC control, visualization tools, determining causes and effects and determining the importance of problems affecting product quality. Quality management principles, norms and standards

Exercises:

Tools used to visualize quality problems: flowchart, flowchart, process map, control sheet - examples. Tools used to identify the causes and effects of quality problems: Ishikawa diagram, relationship diagram, matrix diagram - examples. Tools used to determine the importance of problems with quality, e.g. the Pareto-Lorentz diagram.

Project

Quality planning - quality plans, standards for implementing technical control

### Teaching methods

1. Lecture: multimedia presentation, illustrated with examples on the board.
2. Tutorials: multimedia presentation illustrated with examples given on a blackboard and performance of tasks given by the teacher - practical exercises.
3. Project: project task and presentation



## Bibliography

### Basic

Quality management principles

<https://www.iso.org/files/live/sites/isoorg/files/store/en/PUB100080.pdf>

Application of 7 QC Tools to Investigate the Rejection of Lathe Beds – Case Study of a Machine Tool Manufacturing Company <https://www.sdmimd.ac.in/SDMRCMS/cases/CIM2015/4.pdf>

<https://www.nikunjboraniya.com/2018/10/7-qc-tools-for-process-improvement.html>

Mazur A., Quality management, Wydawnictwo Politechniki Poznańskiej, Poznań, 2022, 216 s.

### Additional

ISO 9001:2015 - Quality management systems — Requirements

Jasiulewicz-Kaczmarek M., ISO 9000:2015 quality management principles as the framework for a maintenance management, 2016 DOI: 10.21008/j.0239-9415.2016.069.05

I. Heizer, J. Render, B. Operations Management, Prentice Hall 2005

## Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,0
Classes requiring direct contact with the teacher	45	2,0
Student's own work (literature studies, preparation for laboratory classes/tutorials, preparation for tests, project preparation) <sup>1</sup>	55	2,0

<sup>1</sup> delete or add other activities as appropriate