



COURSE DESCRIPTION CARD - SYLLABUS

Course name

Quality and security management [N1ZiIP1>ZJiB]

Course

Field of study

Management and Production Engineering

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

part-time

Requirements

compulsory

Number of hours

Lecture

20

Laboratory classes

0

Other (e.g. online)

0

Tutorials

10

Projects/seminars

0

Number of credit points

4,00

Coordinators

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Lecturers

Prerequisites

Has knowledge of the basics of management, production organization, production methods, and the basics of mathematical statistics

Course objective

Knowing and understanding the importance of various aspects of product quality. Acquiring the ability to use in a company the principles, methods and tools of quality engineering and quality management
Acquiring knowledge and skills in the field of determining the qualitative ability of the process and determining the quality level of products
Understanding the principles of designing and functioning of quality management systems
Understanding the principles of product safety declaration

Course-related learning outcomes

Knowledge:

Understands various aspects of quality. Realizes the social and economic importance of quality.

He knows the place of quality in the product life cycle and principles of pro-quality product design.

Has knowledge about the tools for measuring and assessing the quality of machines, processes and the quality of products

He knows the basics of statistical process control and statistical quality control of products
Has knowledge of strategies, principles and tools for continuous process improvement
He knows the basics of quality management systems, auditing and certification

Skills:

Can identify critical qualitative characteristics and on the basis of measurement results determine their statistics in a sample and estimate population parameters
Can analyze the qualitative ability of the process
He can design and use a process control card
He can identify problems in the processes with ensuring the planned quality and also indicate the possibilities of their solutions

Social competences:

He can cooperate and lead a team performing tasks in the field of quality management
Is aware of the responsibility of the engineer and the quality manager for the products manufactured by the companies

Methods for verifying learning outcomes and assessment criteria

Learning outcomes presented above are verified as follows:

Lectures

An exam at the end of the semesters based on a multiple-choice test. The test contains 50 questions.
Minimum for passing the exam: 60% correct answers

Exercises

Based on completed problem tasks

Programme content

Scope of quality engineering and quality management.
Quality aspects.
Product life cycle.
Quality planning.
Quality inspection. Statistical process control (SPC).
Functions and principles of quality management.
Quality systems - ISO 9001
Economic aspects of quality management.
Product safety - CE mark.

Course topics

Lectures:

Scope of quality engineering and quality management.
Quality aspects. Quality of design, quality of performance, fitness for use. Product life cycle.
Quality planning. Quality oriented design of products and processes: QFD, FMEA, APQP, PPAP.
Quality inspection. Quality metrics. Statistical control (SPC), control charts, capacity indicators; statistical acceptance control.
Quality management strategies and functions: TQM, Six Sigma, planning, assurance, control, improvement.
Strategies methodologies of quality improvement: PDCA, DMAIC.
Quality systems meeting the requirements of the ISO 9000 standard. Designing quality systems. Auditing, certifying and maintaining quality systems. Accreditation.
Product safety - CE mark.
Economic aspects of quality management.

Exercises:

Application of QFD methods in the product design.
Application of FMEA in the risk assessment.
Application of quality tools and methods (brainstorming, Ishikawa diagram, Pareto diagram, ABCD analysis, taxonomy diagram and others) in improvement.
Design and use of control charts. Analysis of the quality capacity of the processes.

Design of quality

Teaching methods

The lecture illustrated with a multimedia presentation containing the discussed program content.
Problem solving.

Bibliography

Basic:

Hamrol A.: Zarządzanie i inżynieria jakości. Wydawnictwo Naukowe PWN, Warszawa 2017
Zymonik Z., Hamrol A., Grudowski P.: Zarządzanie jakością i bezpieczeństwem. Polskie Wydawnictwo Ekonomiczne, 2013
Ram Chandra, Environmental Waste Management, CRC Press, 2015

Additional:

Starzyńska B., Hamrol A., Grabowska M.: Poradnik menedżera jakości. Kompendium wiedzy o narzędziach jakości. Wydawnictwo Politechniki Poznańskiej, Poznań 2010
Szczepańska K.: Koszty jakości dla inżynierów. Wydawnictwo Placet. Warszawa 2009

Breakdown of average student's workload

	Hours	ECTS
Total workload	100	4,00
Classes requiring direct contact with the teacher	30	1,00
Student's own work (literature studies, preparation for laboratory classes/ tutorials, preparation for tests/exam, project preparation)	70	3,00