SYLLABUS

Name: Quality engineering
Name in Polish:
Name in English: Quality engineering

Information on course:

Course offered by department:	Faculty of Organisation and Management
Course for department:	Silesian University of Technology
Study level and form:	Master's degree/Bechelor's degree, Full-time
Term:	Spring semester 2023/2024
Coordinator of course edition:	Dr hab. inż. Patrycja Hąbek, prof. PŚ

Default type of course examination report:

Language:
English

Course homepage:
https://platforma.polsl.pl/roz/

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Short description:
The program of the course provides a well-rounded foundation in quality engineering, covering both fundamental principles and techniques for ensuring and enhancing product and process quality.

Description:
Lecture 15h:

1. Introduction to Quality Engineering (basic concepts related to quality, product quality features, quality engineering in product design, production, operation and disposal)
2. Process approach in quality engineering.
3. Quality improvement methods and tools
4. Quality control
5. Statistical Process Control (SPC)
6. Lean manufacturing principles

Laboratory 15h:

1. Ishikawa diagram
2. Pareto diagram
3. Turtle diagram
4. Quality control system design
5. Quality control procedure

Bibliography:

1. Pyzdek T. (2003). Quality engineering handbook, edited by Paul A. Keller, Marcel Dekker, Inc. New York
2. Tague N. R. (2005). The Quality Toolbox, Second Edition, American Society for Quality, Quality Press, Milwaukee
3. Hąbek P.: Quality engineering tools in production process improvement, Cross-border exchange of experience production engineering using principles of mathematics. Modern mathematical methods in engineering 3mi, 22.1. - 24.1. 2018, Horni Lomna. VSB - Technical University of Ostrava, Silesian University of Technology. Ostrava : VSB - Technical University of Ostrava, 2018, s. 58-64
4. Hąbek P.: The concept of using FMEA method for sustainable manufacturing, Systemy Wspomagania w Inżynierii Produkcji, Cross-border exchange of experience in production engineering using principles of mathematics, vol.6, iss.2, 2017, pp.49-55
5. Hąbek P., Lechowicz P.: Assessment of sustainable production practices The case of company from metal industry, in: MAPE Multidiscipl. Asp. Eng. Prod. 2019 vol. 2 iss. 1, s. 447-456
6. Hąbek, P.; Lavios, Juan J.; Grzywa A.: Lean Manufacturing Practices Assessment. Case Study of Automotive Company. Production Engineering Archives, vol. 29, issue 3, 2023, pp.311- 318. https://doi.org/10.30657/pea.2023.29.36

Learning outcomes:
Knowledge. Knows and understands:

K1A _W2 Theories and general methodology of research in management and quality sciences as well as the nature, place and importance of social sciences in engineering and managerial activities specific to the management and organization of sociotechnical systems.

Skills. Is able to:
K1A _U2 Identify, analyze and interpret social and economic phenomena and processes using knowledge in the field of social sciences and standard methods and tools of management and quality sciences in engineering management activities aimed at shaping the efficiency, productivity and organization of production enterprises.
K1A _U4 When identifying and formulating specifications for engineering tasks and solving them recognize their system and non-technical aspects, including ethical aspects.
K1A _U10 Integrate and apply interdisciplinary knowledge from engineering and technical sciences incorporating principles and objectives of sustainable development to product life cycle management.

Social competences. Is ready for:
K1A _K2 Fulfilling social obligations, co-organizing activities for the social environment, initiating activities for the public interest, thinking and acting in an entrepreneurial manner.

Assessment methods and assessment criteria:

Lecture: Test of knowledge provided during lectures. Passing threshold: 50% of points.
Laboratory: report on each completed exercises (arithmetic average of partial grades). Reports are assessed in terms of content and formal aspects.
Course final grade: arithmetic average of grades from lecture and laboratory.

Practical placement: