

Advanced quality management techniques - opis przedmiotu

Informacje ogólne	
Nazwa przedmiotu	Advanced quality management techniques
Kod przedmiotu	06.9-WM-ZiIP-IJ-ANG-D-23_20
Wydział	Wydział Mechaniczny
Kierunek	Management and Production Engineering
Profil	ogólnoakademicki
Rodzaj studiów	drugiego stopnia z tyt. magistra inżyniera
Semestr rozpoczęcia	semestr zimowy 2023/2024

Informacje o przedmiocie	
Semestr	3
Liczba punktów ECTS do zdobycia	2
Typ przedmiotu	obowiązkowy
Język nauczania	angielski
Sylabus opracował	• mgr Karol Dąbrowski

Formy zajęć					
Forma zajęć	Liczba godzin w semestrze (stacjonarne)	Liczba godzin w tygodniu (stacjonarne)	Liczba godzin w semestrze (niestacjonarne)	Liczba godzin w tygodniu (niestacjonarne)	Forma zaliczenia
Projekt	30	2	-	-	Zaliczenie na ocenę
Wykład	15	1	-	-	Zaliczenie na ocenę

Cel przedmiotu

The aim of the "**Advanced techniques of quality management**" course is to acquire knowledge and skills in planning and quality management in enterprises in which quality criteria are raised by industry standards, such as e.g. ISO TS 16949, VDA standards, HACCP and production systems, e.g. TPS. Students learn about advanced methods of quality management and decision analysis, as well as the modern measuring devices used in industrial plants. The subject prepares for work in the scope of building quality management systems in an enterprise, especially in the automotive, metal and food industry.

Wymagania wstępne

Quality and safety management, resource management of the enterprise, mathematical statistics, fundamentals of metrology, project management, strategic management

Zakres tematyczny

Lecture:

Quality management - introduction, review of standards and quality management systems - ISO standards:

- Lean Management - optimisation through the elimination of waste,
- Normative approach to quality management - ISO, VDA, HACCP standards,
- A systemic approach to quality management - Toyota Production System,
- Quality planning tools - APQP (Advanced Product Quality Planning), PPAP (Production Part Approval Process), Control Plan - construction, FMEA (Failure mode and effects analysis).

Quality management in production - built-in quality - modern devices supporting control:

- A comprehensive approach to building quality in the organisation - TQM,
- Statistical process control in mass production - SPC,
- Evaluation of measurement systems in the MSA process,
- Basic tools for quality assurance in the process - visualisation, standardisation, testing, Poka Yoke,
- Measuring machines and devices - simple measuring machines (callipers, micrometres), microscopes, endurance testing machines, co-ordinate measuring machines, 3D scanners, thermal imaging cameras.

Quality improvement tools and problem analysis:

- Problem solving tools - 5W2H analysis, 5xWhy analysis, cause and effect diagram (Ishikawa), flowcharts, analysis and planning for the implementation of remedial measures,
- Decision analysis - SMART, AHP,
- Effective project management, strategy building and lasting customer relations - CSR.

Project:

The project task is based on issues proposed by the lecturer or by the student. The aim of the project is to describe and correctly diagnose the research problem, present possible methods of solving it and, having proposed a specific method / technique, implementing it, for example, through simulations to the process. The project should contain a detailed procedure to get to the bottom of the problem by using problem-solving tools. Proposing several methods, comparing them and selecting the optimal one, then preparing a detailed description of the possible effects.

Metody kształcenia

Lecture: a conventional lecture

Project: a project implemented in groups or individually

Efekty uczenia się i metody weryfikacji osiągnięcia efektów uczenia się

Opis efektu	Symbole efektów	Metody weryfikacji	Forma zajęć
The student is able to select and use appropriate methods, in order to optimise his/ her research into the simple problems, related to Management and Mechanical Production Engineering.	• K_U14	• projekt	• Projekt
The student is able to assess the usefulness and applicability of the latest techniques and technologies in the area of Management and Production Engineering, in terms of quality and modern marketing.	• K_U20	• przygotowanie projektu	• Projekt
The student has orderly and specific theoretical knowledge of branches, within a chosen speciality (Quality engineering, Logistic, Production and service management)	• K_W15	• kolokwium	• Wykład
has an orderly, theoretical knowledge of decision support systems and knowledge management with regard to ethics.	• K_W14	• przygotowanie projektu	• Projekt
The student is able to think and act both creatively and entrepreneurially.	• K_K06	• projekt	• Projekt
The student has knowledge of development trends and new developments in management, information technology, manufacturing engineering.	• K_W16	• kolokwium	• Wykład
The student is able to design and apply tools for the quality control of processes and of mechanical engineering products	• K_U27	• przygotowanie projektu	• Projekt
The student is able to propose solutions aimed at improving and/or modifying existing technical processes and is also able to estimate the usefulness of new methods and techniques, related to quality management and the improvement of processes, by selecting and using the correct methods and instruments.	• K_U29	• przygotowanie projektu	• Projekt

Warunki zaliczenia

Lecture: passing the test

Project: passing the project

Final rating: the arithmetical mean of grades from individual classes.

Literatura podstawowa

1. Hamrol A., Grudowski P., Zymonik Z., Zarządzanie jakością i bezpieczeństwem, PWE, Warszawa, 2013.
2. Hamrol A., Zarządzanie jakością z przykładami, PWN, Warszawa, 2013.
3. Łunarski J., Zarządzanie jakością. Standardy i zasady, WNT, Warszawa, 2012.

Literatura uzupełniająca

1. Masaaki I., Gemba Kaizen, MT Biznes, Warszawa, 2006.
2. Liker J. K., Droga Toyoty. 14 zasad zarządzania wiodącej firmy produkcyjnej świata, MT Biznes, Warszawa, 2016.
3. Womack J. P., Jones D. T., Roos D., Maszyna, która zmieniła świat, Prodpres.com, Wrocław, 2008.

Uwagi

Zmodyfikowane przez dr inż. Tomasz Belica (ostatnia modyfikacja: 12-04-2023 23:05)