



Subject card

Subject name and code	QUALITY ENGINEERING, PG_00070688						
Field of study							
Date of commencement of studies	October 2026		Academic year of realisation of subject		2028/2029		
Education level	first-cycle studies		Subject group		Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	3		Language of instruction		English		
Semester of study	5		ECTS credits		5.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Management Engineering and Quality -> Faculty of Management and Economics -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Piotr Grudowski				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	45.0	0.0	0.0	75
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	75		3.0		47.0	125
Subject objectives	Preparing students for comprehensive analysis, evaluation, and improvement of production and management processes using the Six Sigma methodology and the DMAIC cycle, based on knowledge of statistical, metrological, and quality tools as well as the principles for assessing process variability and capability, while fostering a pro-quality, analytical, and design-oriented approach to problem solving in the context of organizing industrial and service processes.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_K01] is ready to fulfill professional roles responsibly, taking legal, ethical, and cultural aspects into account in decision-making processes.		is ready to act as a quality specialist in a responsible manner, taking into account legal requirements, industry standards, and ethical implications of decisions related to product quality and safety.		[SK4] Assessment of communication skills, including language correctness [SK5] Assessment of ability to solve problems that arise in practice		
	[K6_W06] understands and applies methods for classifying and evaluating acquired information based on advanced general and specialized knowledge, with consideration of their application in various types of professional activities.		knows and understands methods for classifying and evaluating information related to process and product quality, including interpretation of measurement data and statistical analysis results in professional practice.		[SW1] Assessment of factual knowledge		
	[K6_U05] designs innovative solutions for complex management processes by utilizing appropriate methods and techniques.		is able to carry out measurements and analyze qualitative and quantitative data in simulated and real processes, applying statistical and metrological tools to assess process variability and capability, and to design process improvement actions in accordance with the Six Sigma methodology, including the preparation of a report containing analysis results and final conclusions.		[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information		

Subject contents	Course content – lecture 1. Introduction to the subject 2. The concepts of variability, stability and process capability 3. Basic quantitative data analysis tools 4. Classification and identification of quality problems 5. The essence of the Six Sigma program 6. Team organization; roles in and around the team 7. DMAIC methodology		
	Course content – laboratory 1. Fundamentals of metrology and technical drawing 2. Validation of measurement tools 3. Measurement System Analysis (MSA) 4. Statistical Process Control (SPC) 5. Tools and methods for identifying the causes of non-compliance 6. Analysis of the probability of occurrence and consequences of the risk associated with a non-compliant product		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Laboratory tasks	60.0%	35.0%
	Problem-based test (midterm exam)	60.0%	30.0%
	Written exam with open- and closed-ended questions	60.0%	35.0%
Recommended reading	Basic literature	1. Piotr Grudowski, Włodzimierz Przybylski, Mieczysław Siemiątkowski, Inżynieria jakości w technologii maszyn, Wydawnictwo Politechniki Gdańskiej, 2006 2. Adam Hamrol, Zarządzanie i inżynieria jakości Wydawnictwo Naukowe PWN, 2018 3. Piotr Grudowski, Ewa Leseure, LSS Plutus - Lean Six Sigma dla małych i średnich przedsiębiorstw, WNT, 2013	
	Supplementary literature	None	
	eResources addresses		
Example issues/ example questions/ tasks being completed	• Actions as a result of the use of SPC cards • Elements of the Robust Design methodology • The importance of measurement in the assessment of process variability • Elements of technical drawing • Variation analysis in the process • Measurement system analysis		
Practical activities within the subject	Not applicable		

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