



## Subject card

Subject name and code	Quality Engineering, PG_00053772						
Field of study	Engineering Management						
Date of commencement of studies	October 2020	Academic year of realisation of subject			2022/2023		
Education level	first-cycle studies	Subject group			Optional subject group 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			Polish not relevant		
Semester of study	5	ECTS credits			6.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Katedra Inżynierii Zarządzania i Jakości -> Faculty of Management and Economics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Piotr Grudowski					
	Teachers	dr hab. inż. Piotr Grudowski dr Mateusz Muchlado					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	30.0	0.0	0.0	60
	E-learning hours included: 0.0						
	Inżynieria Jakości (Zima 22/23) - Moodle ID: 25296 <a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=25296">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=25296</a>						
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	60	10.0	80.0	150		
Subject objectives	Presentation of the concept of Quality Engineering based on the experiences of the Polish School of Quality and international achievements.						
Learning outcomes	Course outcome	Subject outcome		Method of verification			
	[K6_W13] has a basic knowledge of the design, modelling and optimisation of technical processes and systems	The student has knowledge of modeling, design and optimization of processes using quality engineering methods - in particular Six Sigma.		[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects			
	[K6_U08] analyses engineering and managerial solutions in decision-making processes, taking into account pro-quality and pro-environmental aspects, as well as safety of work processes	The student is able to use specialized statistical software (eg MiniTab) to support process management using quality engineering methods.		[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools			
Subject contents	<p>LECTURE: Introduction to the subject. Concepts of process variability, stability and capability. Basic quantitative data analysis tools. Classification and identification of quality problems. The essence of the Six Sigma program. Organization of the team; roles in the team and in the environment. DMAIC methodology.</p> <p>LABORATORIUM: Podstawy metrologii i rysunku technicznego; Walidacja narzędzi pomiarowych; Analiza Systemu Pomiarowego (MSA); Statystyczna Kontrola Procesu (SPC), Narzędzia i metody identyfikacji przyczyn powstawiania niezgodności, Analiza prawdopodobieństwa wystąpienia i skutków ryzyka związanego z produktem niezgodnym</p>						

Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Test	60.0%	25.0%
	Team Project	60.0%	25.0%
	Final test	60.0%	50.0%
Recommended reading	Basic literature	<p>Piotr Grudowski, Włodzimierz Przybylski, Mieczysław Siemiątkowski, Inżynieria jakości w technologii maszyn, Wydawnictwo Politechniki Gdańskiej, 2006.</p> <p>Adam Hamrol Zarządzanie i inżynieria jakości Wydawnictwo Naukowe PWN, 2018.</p> <p>Piotr Grudowski, Ewa Leseure, LSS Plutus - Lean Six Sigma dla małych i średnich przedsiębiorstw, WNT, 2013.</p>	
	Supplementary literature	not relevant	
	eResources addresses	<p>Podstawowe</p> <p><a href="https://katalog.bg.pg.edu.pl/lib/item?id=chamo:95378&amp;theme=system">https://katalog.bg.pg.edu.pl/lib/item?id=chamo:95378&amp;theme=system</a> - Available in the library.</p>	
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> <li>1. Actions resulting from the use of SPC charts</li> <li>2. Elements of the Robust Design methodology</li> <li>3. The importance of measurement in the assessment of process variability</li> <li>4. Elements of technical drawing</li> <li>5. Process variability analysis</li> <li>6. Analysis of the measurement system</li> </ol>		
Work placement	Not applicable		