



Subject card

Subject name and code	Lean Manufacturing, PG_00059505						
Field of study	Management and Production Engineering						
Date of commencement of studies	February 2023	Academic year of realisation of subject			2023/2024		
Education level	second-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	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Katedra Inżynierii Zarządzania i Jakości -> Faculty of Management and Economics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Joanna Czerska					
	Teachers	mgr Anna Wendt dr inż. Joanna Czerska					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	15.0	0.0	15.0	0.0	60
	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	60	6.0		34.0	100	
Subject objectives	The purpose of the course is to familiarize students with the key tools of Lean Manufacturing and the context in which they are applied. Learning about these tools is done through theoretical issues supported by practical examples, exercises on the use of the tools, and a project on the application of several tools applied to material flow designinig.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_U04] is able to plan and carry out experiments, including measurements and computer simulations, interpret the obtained results and extract conclusions; can use analytical, simulation and experimental methods to formulate and solve engineering tasks	The student, participating in a non-computer simulation game, makes decisions and verifies the results in order to make decisions in subsequent rounds of the game on the basis of conclusions and reflections from the experiments carried out	[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject
	[K7_K02] is aware of the importance and understanding of non-technical aspects and effects of engineering activities, including its impact on the environment, and the related responsibility for decisions made demonstrates knowledge of actions to reduce risk and anticipate the social impact of engineering and manufacturing activities	The student is aware of the responsibility for the work environment that he creates for production workers as a production engineer. At the same time, it focuses on minimizing the use of resources for production.	[SK5] Assessment of ability to solve problems that arise in practice
	[K7_U08] is able to work in a group, assuming various roles in it, including managing a small team, assuming responsibility for the results his work	The student carries out tasks and projects in a group, taking on the roles of leader, team member, quality controller. The student realizes team goals.	[SU1] Assessment of task fulfilment
	[K7_W03] has an orderly, theoretically founded knowledge related to selected areas of production engineering.	The student knows the key Lean Manufacturing tools used by manufacturing engineers	[SW1] Assessment of factual knowledge
[K7_K01] is aware of the need to expand knowledge and verify the methods of solving problems by consulting experts	The student consciously uses information available in books, articles and on the Internet to create solutions within the framework of applied Lean Manufacturing tools	[SK5] Assessment of ability to solve problems that arise in practice	
Subject contents	<ul style="list-style-type: none"> • Introduction to Lean Manufacturing • Problem solving • One piece flow and work scenarios • Kanban at the workplace • Water spider • TWI • TPM and process performance management • Flexibility management. EPE rate and minimum production batch sizing • SMED • Poka-Yoke 		
Prerequisites and co-requisites	Completion of lean management classes		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	60.0%	20.0%
	Credit works	0.0%	30.0%
	Project	60.0%	30.0%
	Quizzes on e-nauczanie	60.0%	20.0%
Recommended reading	Basic literature	Czerska J., Podstawowe narzędzia Lean Manufacturing, Lean Q Team , 2014	
		Czerska J., Pozwól płynąć swojemu produktowi. LeanQ Team, 2011	
	Supplementary literature	Czerska J. Doskonalenie strumienia wartości, wyd. 2., LeanQ Team, 2014	
	eResources addresses	Adresy na platformie eNauczanie: Lean Manufacturing_Joanna Czerska_MECH_2024 - Moodle ID: 31423 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=31423	
Example issues/ example questions/ tasks being completed	1. Design a production cell for product X according to one piece flow principles 2. Use the problem solving method to solve problem X 3. Design a workstation kanban for a production nest 4. Design changes to the machine changeover process to reduce its duration 5. Develop a work standard for an employee working in the nest you have designed.		
Work placement	Not applicable		