GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Lean Manufacturing, PG_00064732						
Field of study	Management and Production Engineering						
Date of commencement of studies	February 2025		Academic year of realisation of subject	2025/2026			
Education level	second-cycle studies		Subject group	Specialty 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	Department of Management Engineering and Quality -> Faculty of Management and Economics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Joanna Czerska				
	Teachers						
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						
	Additional information: Tasks carried out in teams, team projects, non-computer simulation game						
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		9.0	31.0	100	
Subject objectives	The aim of the course is to familiarize students with the key Lean Manufacturing tools necessary in the work of a process/production engineer and the context in which they are used. Learning these tools is done through theoretical issues supported by practical examples, exercises in the use of tools and a project of using several tools in the field of material flow design						

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_U04] creatively designs or modifies, in whole or at least in part, production and technological systems and processes, in accordance with the given specifications, taking into account technical and non-technical aspects, estimating costs and using known design techniques appropriate for tasks in the field of Management and Production Engineering	The student is able to design key solutions in the field of material flow design in the production process.	[SU3] Assessment of ability to use knowledge gained from the subject
[K7_W02] demonstrates structured and theoretically based knowledge covering key issues in the field of Management and Production Engineering allowing for modeling and analysis of stationary and non-stationary production processes and systems, devices and technological processes with continuous and discrete operation	The student is able to indicate and explain methods necessary to solve specific problems related to managing material flow in the manufacturing process.	[SW1] Assessment of factual knowledge
[K7_U13] evaluates the feasibility and potential for utilizing new technical and technological achievements in accomplishing tasks characteristic for the field of study	The student is able to select and use a Lean Manufacturing tools to suit the selected context and needs resulting from the goals of the manufacturing process.	[SU1] Assessment of task fulfilment
[K7_K12] is ready for fullfiling social commitement and initation of actions for public interest including entrepreneurial thinking and acting	The student is able to work in a group and share knowledge and experience also outside the group.	[SK1] Assessment of group work skills

Subject contents

- Introduction to Lean Manufacturing Using the Problem Solving method to define challenges to be solved
- Designing a manufacturing process based on the One Piece Flow method
- Designing a Work Scenarios in a manufacturing cell for a variable number of employees
- Managing the level of inventories at workstations - Workstations Kanban
- Designing the process of workstations' supply with materials using the Water Spider method
- Work Instructions and Workstations Instruction Using the TWI method
- Managing the maintenance of machines using the TPM concept
- Managing the Efficiency of the manufacturing process
- Managing the Flexibility of the manufacturing process. EPE Indicator and Minimum Batch Size
- Reducing machine Changeover Times using the SMED method
- Technical methods of Preventing Errors using the Poka-Yoke concept

Prerequisites and co-requisites

The student is able to define the components of production processes and the goals set for these processes.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Exam	60.0%	20.0%
Theoretical quizzes	60.0%	20.0%
Projects	60.0%	60.0%

Recommended reading	Basic literature	Bicheno J., Holweg M.,The Lean Toolbox, PICSIE BOOKS, 2023 Harris R.,Harris C., Wilson E., Making Materials Flow: A Lean Material-Handling Guide for Operations, Production-Control, and Engineering Professionals, 2023
	Supplementary literature	Learning to See: Value-Stream Mapping to Create Value and Eliminate Muda
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	All the issues can be found in the course: "Lean Manufacturing Mech" on e-nauczanie	
Work placement	Not applicable	

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