



Subject card

Subject name and code	Planning and production control, PG_00059503						
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	Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Aleksandra Wiśniewska					
	Teachers	dr inż. Bogdan Ścibiorski dr inż. Aleksandra Wiśniewska dr inż. Sławomir Szymański					
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 program of lectures and table and project exercises is to equip the student with advanced knowledge of the application of production management models at the tactical and operational level, from issues related to assortment and quantity planning, through resource planning in conditions of dependent and independent demand, to issues related to maintenance machine park aimed at assessing and improving the efficiency of machines and devices.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_U09] is able to define the directions of further learning and implement the process of self-education	The student is able to analyze the effectiveness of the methods of solving problems chosen by him/her. Is able to identify shortages of knowledge, skills and experience, and then set development directions based on the principles of continuous improvement.	[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task [SU3] Assessment of ability to use knowledge gained from the subject
	[K7_U05] is able - in accordance with a given specification, taking into account non-technical aspects - to design a complex device, object, system or process related to the studied engineering discipline, and to implement this project - at least in part - using appropriate methods, techniques and tools, if necessary, adapting to it the purpose of existing or developing new tools	The student is able to design the arrangement of workstations in the production structure of the subject specialization and design the production department using methods and tools commonly used for this purpose and modifications created for non-standard solutions.	[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU1] Assessment of task fulfilment
	[K7_K03] can think and act in a creative and entrepreneurial manner	The student organizes his own and team work, choosing means and methods of team role management, task allocation management and change management. Knows and uses activation methods and tools that foster creativity and innovation.	[SK1] Assessment of group work skills [SK3] Assessment of ability to organize work [SK4] Assessment of communication skills, including language correctness [SK5] Assessment of ability to solve problems that arise in practice
	[K7_W02] has extended knowledge covering key issues characterizing production processes	The student identifies, selects analytical methods, analyzes, determines relationships, formulates conclusions and recommendations for the management and control of production processes.	[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects

Subject contents

The program of lectures and blackboard and project exercises is intended to equip the student with advanced knowledge in the field of application of production management models at the tactical and operational level, from issues related to assortment and quantity planning, through resource planning in conditions of dependent and independent demand, to issues related to maintenance. machinery aimed at assessing and improving the efficiency of machines and devices.

Lecture content:

1. Conditions for the development of production and research and development activities in the area of innovative products and services.
2. Selected problems of scientific and technical preparation of production and technology transfer.
3. Investment and organizational preparation and start-up of production.
4. Manufacturing strategies: goals, characteristics, procedures, projects.
5. Product (industrial product): designing its development and demand, marketing strategies and forecasting methods in production. Designing the level of production capacity and the production program taking into account the level of meeting social needs and the characteristics of the economic environment.
6. The concept of a production system. Structure, forms of organization and management of systems. Product-process implications, trends, reengineering, computer support, artificial intelligence.
7. Macro- and micro-organizational design of production systems: processes, structures and flows.
8. Production control. Production process - production flow control (simulation and analytical methods).
9. Planning material needs and production resources. Material flow synchronization. Production flow control, lean production, tight cut management (OPT) and human resources.
10. Modern methods of supporting production management. Industry 4.0 and industry 5.0. Centers of excellence - clusters.

Exercise content:

1. Production programs of machine parts and assembly units creating complex products.
2. Calculation of the production batch size.
3. Calculation of the technological period of production of batches of simple and complex products.
4. Calculation of interoperational stocks and material needs
5. Controlling equipment efficiency from a systemic perspective.
6. Optimization of the company's production program using linear and aggregate programming models.
7. Planning of projects using network methods.

Design content:

	<p>- production process design;</p> <p>- design of the production station;</p> <p>- production line design.</p> <p>As part of the project classes, the student is to acquire skills including: designing the arrangement of workstations in the production structure with the subject specialization and designing the production department using the indicator method for calculations.</p>														
<p>Prerequisites and co-requisites</p>	<p>Subjects covered by the first-cycle study program in Management and Production Engineering:</p> <p>Methods and techniques of production improvement</p> <p>Innovations in production engineering</p> <p>Quality management systems</p> <p>Fundamentals of production and service management</p>														
<p>Assessment methods and criteria</p>	<table border="1"> <thead> <tr> <th data-bbox="454 853 798 884">Subject passing criteria</th> <th data-bbox="801 853 1141 884">Passing threshold</th> <th data-bbox="1144 853 1479 884">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="454 889 798 920">Final evaluation of two lecture tests</td> <td data-bbox="801 889 1141 920">60.0%</td> <td data-bbox="1144 889 1479 920">30.0%</td> </tr> <tr> <td data-bbox="454 925 798 956">Final evaluation of the project</td> <td data-bbox="801 925 1141 956">60.0%</td> <td data-bbox="1144 925 1479 956">35.0%</td> </tr> <tr> <td data-bbox="454 960 798 992">Final evaluation of the exercises</td> <td data-bbox="801 960 1141 992">60.0%</td> <td data-bbox="1144 960 1479 992">35.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Final evaluation of two lecture tests	60.0%	30.0%	Final evaluation of the project	60.0%	35.0%	Final evaluation of the exercises	60.0%	35.0%
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<p>Recommended reading</p>	<p>Basic literature</p>	<p>Literatura:</p> <p>1. Pająk Edward , Klimkiewicz Marek , Kosieradzka Anna, Zarządzanie produkcją i usługami, PWE Polskie Wydawnictwo Ekonomiczne 2014</p> <p>2. Pająk Edward, Zarządzanie produkcją. Produkt, technologia, organizacja,. Wydawnictwo Naukowe PWN 2021</p> <p>3. Inżynieria produkcji. Kompedium wiedzy, praca zbiorowa, PWE Polskie Wydawnictwo Ekonomiczne 2017</p> <p>4. Janusz Mleczo, Sławomir Kłos, Zbigniew Banaszak, praca zbiorowa. Zintegrowane systemy zarządzania. PWE 2016</p> <p>5. Szatkowski K. Nowoczesne zarządzanie produkcją, Wydawnictwa Naukowe PWN 2021</p> <p>6. Kulińska E., Busławski A., Zarządzanie procesem produkcji, Difin 2019</p>													
	<p>Supplementary literature</p>	<p>Provided during classes and eLearning resources</p>													
	<p>eResources addresses</p>	<p>Adresy na platformie eNauczanie: Planowanie i sterowanie produkcją, PG_00059503, ZiIP, Ilst., sem.02, zima 23/24 - Moodle ID: 31042 https://enauzanie.pg.edu.pl/moodle/course/view.php?id=31042</p>													
<p>Example issues/ example questions/ tasks being completed</p>	<p>1. Product and its design and development strategies. 2. Production process: arrangement of production equipment and production flow control. 3. Planning of material needs and production resources and synchronization of material flow. 4. Manufacturing strategies: goals, characteristics, procedures, projects. 5. Designing the level of production capacity and the production program taking into account the level of meeting social needs and the characteristics of the economic environment. 6. Structure, forms of organization and management of production systems and product-process implications, trends and directions of development of production systems. 7. Macro- and micro-organizational design of production systems: processes, structures and flows. 8. Simulation and analytical methods of production flow control. 9. Modern methods of supporting production and innovation management.</p>														

Work placement	Not applicable
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