GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Design of Food Processing Industry, PG_00005440		
Field of study	Mechanical Engineering, Mechanical Engineering		
Date of commencement of studies	October 2020	Academic year of realisation of subject	2022/2023
Education level	first-cycle studies	Subject group	
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	3	Language of instruction	Polish
Semester of study	6	ECTS credits	2.0
Learning profile	general academic profile	Assessment form	assessment
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. Bogdan Ścibiorski	
	Teachers	dr inż. Bogdan Ścibiorski	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	0.0	0.0	30

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	30	0.0	0.0	30

Subject objectives

Learning the basic principles of designing technological lines and methods of analyzing the course of processes
production.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U06] is able to use mathematical and physical models for analysing the processes and phenomena occurring in mechanical devices within the range of material strength, thermodynamics and fluid mechanics	He is able to analyze the influence of phenomena occurring during production and their influencing the quality of machine parts produced in the lines.	[SU2] Assessment of ability to analyse information
[K6_W08] possesses basic knowledge including the methodology of designing machine parts, mechanical devices, selection of construction materials, manufacturing and operation, with the lifetime cycle	The student acquires basic knowledge in the field of structure design and operation of production line systems and the selection of a spectrum of manufactured mechanical components for the established application possibilities of technological machines	[SW1] Assessment of factual knowledge
[K6_W11] possesses knowledge on design, technology and manufacturing of machine parts, metrology, and quality control; knows and understands methods of measuring and calculating basic values describing the operation of mechanical systems, knows basic calculating methods applied to analyse the results of experiments	Has knowledge of computational methods and tools for process planning, analysis and evaluation quantify the functioning of the systems flow type production.	[SW1] Assessment of factual knowledge

Subject contents	The production system and its decomposition. Parameters of the production process. Product parameters: program production batch and production package, level of shortages. Machine and operator parameters: time fund, labor-intensity / work-time, shift. Technological line - basic concepts. Simple, complex and generic starting parameters of the production process: production cycle, hourly task, production cycle, machine load factor, quantity of work in progress (WIP). Modeling and simulation of production systems. Distribution of workstations in production systems. Types production stations and selection of machines for them. Means of transport, their selection and connections. Division warehouses and means of transport therein. Production task operation scheduling systems: serial, parallel and series-parallel. Inventory classification. Inventory: intracellular (cyclic and extracyclic), intercellular. Technological possibilities of modern devices production and methods of their programming. Maintaining the efficiency of the line operation production. Computer support in the design of technological line systems.
Prerequisites and co-requisites	Basic information in the field of manufacturing techniques, construction and operation of technological machines and organization of production

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
60%	60.0%	75.0%
Activity in the classroom	51.0%	25.0%

Recommended reading

Basic literature	1. Groover M.P.: Automation, production systems, and computer-integrated manufacturing, 3rd Edition, Pearson Prentice-Hall, New Jersey 2008. 2. Honczarenko J.: Elastyczna automatyzacja wytwarzania.Obrabiarki i systemy obróbkowe, WNT, Warszawa 2000. 3. Honczarenko J.: Obrabiarki sterowane numerycznie, WNT,Warszawa 2008. 4. Mazurczak J.: projektowanie struktur systemów produkcyjnych, Wyd. Polit. Poznańskiej, Poznań 2002. 5. Pająk E.: Zarządzanie produkcją. Produkt, technologia, organizacja, PWN, Warszawa 2013. 6. Robotyzacja procesów produkcyjnych, Warszawa, WNT, 2017
Supplementary literature	1. Durlik I.: Inżynieria zarządzania, Cz. II, Strategia i projektowanie systemów produkcyjnych, Wyd. IV, Wydawnictwo PLACET, Warszawa 2005. 2. Feld M.: Projektowanie i automatyzacja procesów technologicznych części maszyn, WNT, warszawa 2018. 3. Kosmol J.: Automatyzacja obrabiarek i obróbki skrawaniem, WNT, Warszawa 2000
eResources addresses	Adresy na platformie eNauczanie: Projektowanie linii technologicznych, MiBM, sem.06, letni 22/23 ,(M: 03320W0) - Moodle ID: 26885 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=26885

Example issues/ example questions/ tasks being completed	1. Output parameters of the production process. 2. Selection of the distribution of workstations in production systems. 3. Typologies of production systems with linear positioning of technological machines. 4. Features of construction and parameters describing the mode of operation of production lines. 5. Designing a production line for specific requirements of the spectrum of manufactured items
Work placement	Not applicable