

关。GDAŃSK UNIVERSITY 多 OF TECHNOLOGY

Subject card

. PG 00056113								
Mechatronics								
October 2022		Academic year of realisation of subject			2024/2025			
first-cycle studies		Subject group						
Full-time studies		, , ,			at the university			
3					Polish			
5		ECTS credits			2.0			
general academic profile		Assessment form			assessment			
Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Ship Technology						d Ship		
, ,		prof. dr hab. inż. Kazimierz Orłowski						
Teachers								
			· · · ·		t		SUM	
hours		0.0	15.0	0.0		0.0	30	
-		n didactic	Particination i	n	Self-st	udv	SUM	
	classes includ plan					udy		
Number of study hours	30		0.0		0.0		30	
Explanaitions of processes in mechanisms of machine tools, which affect their technical-operational features. The analyses of the structure, performance and maintenance of basic units and groups of machine tools. Joining knowledge from different domains.								
Course out	Subject outcome			Method of verification				
choosen tools to compare design		Student is able to design a simple kinematics and its technical solution			[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information			
[K6_U02] is able to elaborate on specific mechatronic topics as well as topics from engineering and technical sciences and disciplines such as Mechanical Engineering, Automation, Electronics and Electrical Engineering		Can select the basic the means of production to be solved task assigned			[SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information			
[K6_W10] has a basic kn about development trend terms of engineering and sciences and scientific di Mechanical Engineering, Automation, Electronics a			Knows the basic technologies used in the manufacture of parts machines			[SW1] Assessment of factual knowledge		
LECTURE: Technicaloperational features of machine tools: productivity, accuracy, stiffness, safety, ergonomics, durability and reliability. Basic units of modern machine tools. Requirements, properties and structure of bodies, guiding systems and spindle units. Analysis of athe kinematic system of a machine tool: concepts, kinematical couplings, kinematical accuracy. CNC machine tools with series and parallel connections in the system configuration. Drives of automated manufacturing machines. Evolution of application electric, pneumatic and hydraulic drives. Specification of requirements that drives of modern machine tools have to meet with. Classification, basic features and area of application of contemporary drives with electric motors. Definition and structure of a servodrive. Direct drives. Examples of drives of modern manufacturing machines. PRACTICAL EXERCISES: Kinematical accuracy of machine tools. Positioning accuracy of the table of the CNC miller. Dynamical investigations of machine tools. Design structure of numerical controlled machine tools. Power balance in manufacturing machines. Constructional structures of numerically controlled manufacturing machines.								
	October 2022 first-cycle studies Full-time studies 3 5 general academic pro- Institute of Manufactur Technology Subject supervisor Teachers Lesson type Number of study hours E-learning hours inclu Learning activity Number of study hours Explanaitions of proce The analyses of the s Joining knowledge fro Course outtor [K6_U05] is able to ur choosen tools to com solutions of elements mechatronics system to given application a crtierions (e.g. power speed, costs) [K6_U02] is able to ur choosen tools to com solutions of elements mechatronics asystem to given application a crtierions (e.g. power speed, costs) [K6_U02] is able to e specific mechatronic as topics from engine technical sciences ar such as Mechanical Automation, Electron Electrical Engineering for Mechatronics cur- LECTURE: Technical ergonomics, durability structure of bodies, gu connections in the sys application electric, pi machine tools have to drives with electric me modern manufacturin PRAC TIICAL EXERCI CNC miller. Dynamical cons. Positioning driv Power balance in ma	Mechatronics October 2022 first-cycle studies Full-time studies 3 5 general academic profile Institute of Manufacturing and Mater Technology Subject supervisor Teachers Lesson type Lecture Number of study hours 15.0 E-learning hours included: 0.0 Learning activity Participation in classes includ plan Number of study hours 30 Explanaitions of processes in mechat The analyses of the structure, perfor Joining knowledge from different dor Course outcome [K6_U05] is able to use properly choosen tools to compare design solutions of elements and mechatronics systems according to given application and economic crtierions (e.g. power demand, speed, costs) [K6_U02] is able to elaborate on specific mechatronic topics as well as topics from engineering and technical sciences and disciplines such as Mechanical Engineering, Automation, Electronics and Electrical Engineering [K6_W10] has a basic knowledge about development trends in terms of engineering and technical sciences and scientific disciplines: Mechanical Engineering, Automation, Electronics and Electrical Engineering, Automation, Electronics and Electrical Engineering, Automation, Electronics and Electrical Engineering, adequate for Mechatronics curse	Mechatronics October 2022 Academic realisation first-cycle studies Subject grownellisation first-cycle studies Mode of de 3 Language 5 ECTS cred general academic profile Assessment Institute of Manufacturing and Materials Technology Echnology Subject supervisor prof. dr hab. in Teachers Institute of study Lesson type Lecture Tutorial Number of study 15.0 0.0 hours 0 0 Explanaitions of processes in mechanisms of mact Classes included in study plan Number of study hours 30 Student is ablic kinematics ar solution solutions of elements and mechatronics systems according to given application and economic criterions (e.g. power demand, speed, costs) Student is ablic kinematics ar solution to assigned [K6_U02] is able to elaborate on specific mechatronic and lectorical and siciences and siciplines: Mechanical Engineering, Automation, Electronics and Electronica and Electronica material sciences and scientific disciplines: Mechanical Engineering, Automation, Electronics and Electronica and Electrical Engineering, Automation, Electronics and Electronica and Electronica material sciences and scientific aligning skinems and spinde uic concepts, kinematical accure conocecord bodies, guiding systems and spinde uic	Mechatronics October 2022 Academic year of realisation of subject first-cycle studies Subject group Full-time studies Mode of delivery 3 Language of instruction 5 ECTS credits general academic profile Assessment form Institute of Manufacturing and Materials Technology -> Faculty of Technology Subject supervisor prof. dr hab. inz. Kazimierz OT Technology Subject supervisor prof. dr hab. inz. Kazimierz OT Technology Number of study hours 15.0 Number of study hours 0.0 Number of study hours 0.0 Number of study hours 20 Subject outcome Student is able tools, whice The analyses of the structure, performance and maintenance of b Joining knowledge from different domains. Course outcome Student is able to design a skinematics and its technical solution of elements and mechatronics systems according to given application and economic criterions (e.g. power demand, speedi, costs) [K6_U02] is able to elaborate on specific mechatronic sand Electrical Engineering Knows the basic technologie used in the manufacture of production to be solved task assigned acterial Engineering and technicial sciences and sicelpinees Knows the basic techn	Mechatronics Academic year of realisation of subject October 2022 Academic year of realisation of subject first-cycle studies Subject group Full-time studies Mode of delivery 3 Language of instruction 5 ECTS credits general academic profile Assessment form Institute of Manufacturing and Materials Technology -> Faculty of Mechar Technology Subject supervisor prof. dr hab. inż. Kazimierz Orłowski Teachers Lesson type Lesson type Lecture Tutorial Number of study 15.0 0.0 Number of study Participation in didactic classes included in study plan Participation in consultation hours Number of study 30 0.0 0.0 Number of study 30 0.0 0.0 Number of study 30 0.0 0.0 Number of study Solutions of processes in mechanisms of machine tools, which affect The analyses of the structure, performance and maintenance of basic union solutions of elements and materians. Solution [K6_UO5] is able to use properly choosen tools to compare design Subtent is able to d	Mechatronics Academic year of realisation of subject 2024/2 October 2022 Academic year of realisation of subject 2024/2 first-cycle studies Subject group at the u 3 Language of instruction Polish 5 ECTS credits 2.0 general academic profile Assessment form assess Institute of Manufacturing and Materials Technology -> Faculty of Mechanical En Technology prof. dr hab. inż. Kazimierz Orlowski Subject supervisor prof. dr hab. inż. Kazimierz Orlowski Teachers Lesson type Lecture Tutorial Laboratory Project Number of study 15.0 0.0 15.0 0.0 Learning hours included: 0.0 Learning nours included: 0.0 Learning on processes in mechanisms of machine tools, which affect their fe The analyses of the structure, performance and maintenance of basicu units and g Joining knowledge from different domains. Student is able to design a simple kinematics and its technical solution of elements and solution of elements and solution fore elements and solution fore elements and solution fore elements and solution to be solved task as topics from engineering and technical sciences and disciplineering, Automation, Electronics and Electrical Engineering, Automation, Electronics and Electrical Engineering, Automation, Electronics and	Mechatronics Academic year of realisation of subject 2024/2025 October 2022 Academic year of realisation of subject 2024/2025 first-cycle studies Subject group at the university 3 Language of instruction Polish 5 ECTS credits 2.0 general academic profile Assessment form assessment Institute of Manufacturing and Materials Technology -> Faculty of Mechanical Engineering and Technology Project Seminar Subject supervisor prof. dr hab. inż. Kazimierz Orłowski Seminar Teachers Eeson type Lecture Tutorial Laboratory Project Seminar Number of study 15.0 0.0 0.0 0.0 0.0 Learning nours included: 0.0 Learning nours included: 0.0 Ison on different domains. Self-study Number of study hours 30 0.0 0.0 0.0 0.0 Course outcome Subject outcome Method of ve (Subject autome, adjeuse information sub, as of the structure, performance and maintenance of basic units and groups of ma Joining knowledge from diffierent domains. Subject outcome <	

Prerequisites and co-requisites						
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade			
	Practical exercises	100.0%	30.0%			
	Midterm colloquium	56.0%	70.0%			
Recommended reading	Basic literature	skrawania. Oficyna Wydawnicza Kosmol J.: Serwonapędy obrabia WNT1998.	Honczarenko J.: Obrabiarki sterowane numerycznie. WNT Warszawa			
	Supplementary literature	Grzesik W., Nlesłony P., Kiszka P.: Programowanie obrabiarek CNC. PWN Warszawa, 2020.				
	eResources addresses	Adresy na platformie eNauczanie:				
Example issues/ example questions/ tasks being completed	Final Test contains a number of specific questions with topic, i.e. classes. lectures and lab exercises					
Work placement	Not applicable					