



Subject card

Subject name and code	Pneumatic Systems Design, PG_00058891						
Field of study	Mechanical Engineering						
Date of commencement of studies	February 2024	Academic year of realisation of subject			2024/2025		
Education level	second-cycle studies	Subject group					
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	2	Language of instruction			Polish		
Semester of study	3	ECTS credits			4.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Zakład Hydrauliki i Pneumatyki -> Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Paweł Załuski				
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	0.0	0.0	15.0	0.0	45
	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	45		0.0		0.0	45
Subject objectives	Presentation of various design methods of pneumatic drive and control systems						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_W06] possesses organized, profound knowledge necessary for designing and optimization of complex technological processes, modelling and calculations using numerical methods, knows modern manufacturing methods and tools for designing manufacturing processes of machines, devices, their elements and components		The student knows how to use the information presented in the lecture		[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge		
	[K7_W11] possesses organized knowledge useful in understanding ex-technical conditioning connected with performing the profession of an engineer and taking it into consideration in engineering practice; possesses well-established knowledge within the range of intellectual property, management and organization of manufacturing processes, including the management and life-cycle of a product		The student is able to make a project in accordance with engineering practice. During its implementation, it takes into account the minimization of costs as well as the availability and rational use of production resources		[SW3] Assessment of knowledge contained in written work and projects [SW1] Assessment of factual knowledge		
	[K7_U01] is able to acquire information from specialist literary sources and other sources regarding the construction and operation of machines and related disciplines in polish and in a foreign language, is able to conduct a self-learning process, is able to synthesize the information, form conclusions and justify opinions		The student is able to independently find and use the information necessary to carry out the design process		[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment		

Subject contents	1. Properties of compressed air 2. Elements of pneumatic systems 3. Basic pneumatic systems 4. Methods of design: intuitive, algorithmic, analytic 5. Calculations of pneumatic systems 6. Design of chosen systems											
Prerequisites and co-requisites	Pass of "Basic principles of hydraulics and pneumatics" at I stage studies											
Assessment methods and criteria	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">Subject passing criteria</th> <th style="width: 33%;">Passing threshold</th> <th style="width: 34%;">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td>Laboratory pass</td> <td>56.0%</td> <td>30.0%</td> </tr> <tr> <td>Lecture pass</td> <td>56.0%</td> <td>70.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Laboratory pass	56.0%	30.0%	Lecture pass	56.0%	70.0%
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Recommended reading	Basic literature	Napęd i sterowanie pneumatyczne. W. Szenajch										
	Supplementary literature	Pneumatyka. Elementy i układy. Ł. Węsierski Sterowanie pneumatyczne. Ćwiczenia laboratoryjne. J. Niegoda, W. Pomierski										
	eResources addresses	Adresy na platformie eNauczanie:										
Example issues/ example questions/ tasks being completed	Design of energy efficient pneumatic system with safe control Design of sequential pneumatic system with use of algorithmic method											
Work placement	Not applicable											