



Subject card

Subject name and code	Research laboratory, PG_00057271						
Field of study	Power Engineering						
Date of commencement of studies	February 2024	Academic year of realisation of subject			2024/2025		
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			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Zakład Maszyn Przepływowych -> Institute of Energy -> Faculty of Mechanical Engineering and Ship Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		prof. dr hab. inż. Krzysztof Kosowski				
	Teachers		prof. dr hab. inż. Krzysztof Kosowski				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	30.0	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	8.0		37.0	75	
Subject objectives	The main aim is to prepare students to research work (theoretical, design and experimental investigations), to give them basic principles of experimental design (planning), research methods and analysis of results, formulating conclusions and presentation of results						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K7_K03] is able to think and act creatively and entrepreneurially, is aware of the responsibility for his/her own work and takes responsibility for teamwork	Students can plan a set of procedures to investigate a relationship between variables.			[SK5] Assessment of ability to solve problems that arise in practice [SK3] Assessment of ability to organize work		
	[K7_K04] is able to react in emergency situations, health and life threatening when using power equipment	Students know the OHS principles			[SK3] Assessment of ability to organize work		
	[K7_U01] is able to acquire information from literature, databases and other sources, has the ability of self-education in order to improve his/her professional competence (also in English), is able to prepare a simple scientific paper and its summary in English, as well as an oral presentation	Students can make use of available data sources			[SU4] Assessment of ability to use methods and tools		
	[K7_U04] is able to plan and perform experiments using measurements and computer simulations, together with interpretation of results, is able to present and evaluate the course and results of work in a team realizing an advanced engineering project, is able to use technical documentation and to create it independently	Students can plan and perform experimental investigations (write hypothesis, define variables, choice of equipment, write conclusions, present results)			[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject		

Subject contents	Problems of experimental investigations (theoretical, design and experimental investigations), to give them basic principles of experimental design (planning), research methods and analysis of results, formulating conclusions and presentation of results		
Prerequisites and co-requisites	lectures on turbomachinery		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	report	60.0%	100.0%
Recommended reading	Basic literature	M. Korzyński, Metodyka eksperymentu, PWN WNT, wyd.2 , 2021 (in Polish)	
	Supplementary literature	Literature will be suggested by lecturer according to the particular tasks	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	<p>1. Propose an experimental stand and a schema of investigation on self-excited aerodynamic forces in a turbine stage.</p> <p>2. Propose schema of an experimental stand and a research on operation characteristics of an axial compressor.</p> <p>3. Propose a method for rigid rotor balancing and describe the measurement errors.</p>		
Work placement	Not applicable		