



Subject card

Subject name and code	, PG_00069225						
Field of study	Energetyka wiatrowa w praktyce						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2025/2026		
Education level	first-cycle studies		Subject group				
Mode of study	Full-time studies		Mode of delivery		at the university		
Year of study	4		Language of instruction		Polish Some of the teaching materials and presentation slides used during the classes may be provided in English.		
Semester of study	7		ECTS credits		5.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Engineering Structures -> Faculty of Civil and Environmental Engineering -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Michał Wójcik				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	30.0	0.0	0.0	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		10.0		70.0	125
Subject objectives	The aim of the course is to familiarize students with the fundamental issues related to wind energy - both onshore and offshore - in a practical and interdisciplinary context. The classes are introductory and popular-science in nature, intended to stimulate interest in sustainable energy topics and encourage further education in this field (e.g., at the masters level).						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_K04] Engages in independent lifelong learning and individually follows the development of science and technology in the field of civil engineering.		The student is able to independently search for technical and scientific information in the field of wind energy and follow new technological developments.		[SK2] Ocena postępów pracy		
	[K6_K03] Can effectively, clearly and unambiguously convey information, describe activities and communicate their results/ outcomes to engineers or a wider audience using appropriate communication methods and tools.		The student is able to present and discuss fundamental wind energy topics in a clear and accessible way, using appropriate technical communication tools.		[SK4] Ocena umiejętności komunikacji, w tym poprawności językowej		

Subject contents	Course content – lecture Introduction to wind energy - basic principles, history, and its role in the energy transition.		
	Onshore and offshore wind farms - planning, transport, installation, and maintenance.		
	Aerodynamics and turbine design - blades, materials, and computational simulations.		
	Diagnostics, digital twins, and control systems - data analysis and turbine automation.		
	Environmental, economic, and development aspects of the wind energy sector in Poland and Europe.		
	Course content – exercises Case studies of real wind farms and measurement data analysis.		
	Basic calculations of turbine power and energy yield.		
Prerequisites and co-requisites	Basic knowledge of physics, mechanics, and materials science. Openness to interdisciplinary engineering topics.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Final test or final presentation	50.0%	60.0%
	Attendance and participation	50.0%	40.0%
Recommended reading	Basic literature	1. Burton T., Jenkins N., Sharpe D., Bossanyi E. - <i>Wind Energy Handbook</i> , Wiley. 2. Hau E. - <i>Wind Turbines: Fundamentals, Technologies, Application, Economics</i> , Springer. 3. Lewandowski W. (ed.) - <i>Pro-ecological Renewable Energy Sources</i> , WNT.	
	Supplementary literature	1. Reports by WindEurope, IEA Wind TCP, and the Polish Wind Energy Association (PSEW), itp https://iea-wind.org/ https://eawe.eu/ https://etipwind.eu/ https://windeurope.org/ https://www.psew.pl/ 2. Teaching materials and presentations from CMEW Gdańsk University of Technology. https://cmew.pg.edu.pl/ 3. Recent scientific and industry publications on wind energy.	
	eResources addresses		
	Example issues/ example questions/ tasks being completed	What factors influence the siting of a wind farm? How does an onshore turbine differ from an offshore one? What are the main structural components of a wind turbine? How are digital twins used in turbine diagnostics? What are the current development trends in European wind energy?	
Practical activities within the subject	Not applicable		

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