



Subject card

Subject name and code	Intermediate CDIO Project, PG_00049760						
Field of study	Power Engineering						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2026/2027		
Education level	first-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	3		Language of instruction		English		
Semester of study	5		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Division of Machine Design and Medical Engineering -> Institute of Mechanics and Machine Design -> Faculty of Mechanical Engineering and Ship Technology -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Stanisław Gluch				
	Teachers		dr inż. Stanisław Gluch				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	0.0	45.0	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		3.0		27.0	75
Subject objectives	Familiarization with the principles of design using the CDIO methodology, development of independent work skills, development of engineering skills						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W10] knows the basic installations in the field of renewable energy sources and their impact on the environment		is able to design a stage of a power turbine		[SW3] Assessment of knowledge contained in written work and projects		
	[K6_U11] Can design and properly dimension basic foundations in hydrotechnical construction facilities; can evaluate and list the loads acting on constructions, knows the codes of modern geotechnical investigations and technologies, knows the principles of foundations and safe design of foundations of typical buildings		is familiar with the design of a power turbine		[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment		
	[K6_W09] knows the dangers of electrical devices and the principles of protection against them, has basic knowledge of heat exchangers, has basic knowledge of power equipment such as pumps, compressors, turbines, combustion engines, boilers, pipelines and their accessories and methods of their selection depending on the needs		The student acquires knowledge of the principles of power turbine design.		[SW3] Assessment of knowledge contained in written work and projects		
	[K6_U02] is able to apply the learned mathematical methods to the analysis and design of elements, systems and energy systems		is capable of applying CFD (Computational Fluid Dynamics) calculations in engineering design processes.		[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject		

Subject contents	Course content – project Rankine cycle calculations. 0D stage calculations and design of a turbine. Drafting of the guide and rotor blade of the selected stage. Preparation of the computational mesh. Execution of CFD simulations.		
Prerequisites and co-requisites	Mechanical design and CAD skills development.		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project	56.0%	100.0%
Recommended reading	Basic literature	Kosowski, K., & Banaszkiewicz, M. (2007). <i>Steam and gas turbines: principles of operation and design</i> . ALSTOM. https://books.google.pl/books?id=fKGVtgAACAAJ	
	Supplementary literature	Perycz, S. (1988). <i>Steam and Gas Turbines</i> (I). Wydawnictwo Politechniki Gdańskiej.	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Design and calculations of a turbine stage.		
Practical activities within the subject	Not applicable		

Document generated electronically. Does not require a seal or signature.