



Subject card

Subject name and code	, PG_00056321									
Field of study	Ocean Engineering									
Date of commencement of studies	October 2021		Academic year of realisation of subject		2023/2024					
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		Polish none					
Semester of study	5		ECTS credits		4.0					
Learning profile	general academic profile		Assessment form		assessment					
Conducting unit	Faculty of Ocean Engineering and Ship Technology									
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Jerzy Głuch							
	Teachers									
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM			
	Number of study hours	30.0	15.0	0.0	0.0	15.0	60			
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	60		10.0		30.0	100			
Subject objectives	Getting acquainted students with energetical evaluation of engines and power plants feeded with different primary energy form to transfer it to drive energy as well for transortation as for electricity generation plants. Attention is focused also on energetical effectiveness of renewable energy sources application.									
Learning outcomes	Course outcome		Subject outcome		Method of verification					
	[K6_W06] has an organized knowledge on engineering methods and design tools allowing the conducting of projects within the construction and operation of ocean technology objects and systems		Can formulate assumption for energy project		[SW1] Assessment of factual knowledge [SW3] Assessment of knowledge contained in written work and projects					
	[K6_U05] can formulate a simple engineering task and its specification within the range of design, construction and operation of ocean technology objects and systems		He can solve the problem of power systems efficiency		[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools [SU5] Assessment of ability to present the results of task					
[K6_W05] has an organized knowledge on design, construction and operation of ocean technology objects and systems		can evaluate power system as en component of ocean economy		[SW1] Assessment of factual knowledge [SW2] Assessment of knowledge contained in presentation						
Subject contents	Energy drive systems for power plants. Energy drive systems for marine power . Energy drive systems for power aviation. Hybrid drive systems. Introduction to power plant design methods. Introduction to graph theory. Application of fluid dynamics to design power systems. Design od efficient marine power plants. Application of artificial intelligence systems in power plant design.									
Prerequisites and co-requisites	Basic knowledge in mechanics, thermodynamics and fluid dynamics									
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade					
	test from lectures		60.0%		50.0%					
	Seminary test		80.0%		50.0%					

Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>1. Perycz S., <i>Turbiny parowe i gazowe</i>, Skrypt PG, Gdańsk 1988.</li> <li>2. Perycz S., <i>Turbiny parowe i gazowe</i>, Ossolineum, Gdańsk 1989.</li> <li>3. Traupel W., <i>Thermische Turbomaschinen</i>, Springer-Verlag</li> <li>4. Szczeglaev A. W., <i>Parovye turbiny</i>,</li> <li>5. Urbański P., <i>Gospodarka energetyczna na statkach</i>, Wyd. Morskie 1978</li> <li>6. Kosowski K., <i>Marine turbines</i>, Wyd. PG Two volumens</li> <li>7. Cichy M.: <i>Modelowanie systemów energetycznych</i>, Gdańsk: Wyd. Politechniki Gdańskiej 2001.</li> <li>8. Artemow G. A., Bojkow W. P., Gilmutdinow A. G., <i>Sudowyje gazoturbinnyje ustanowki</i>, Sudostrojenie, Leningrad 1978.</li> <li>9. Andrzejewski S., <i>Podstawy projektowania silowni cieplnych</i>, WNT Warszawa 1975.</li> <li>10. Ziembik A., <i>Gospodarka energetyczna</i>, Skrypt Politechniki Śląskiej, Gliwice 1992.</li> <li>11. Dikij N. A., <i>Sudowyje gazoparoturbinnyje ustanowki</i>, Sudostrojenie, Leningrad 1978.</li> <li>12. <b>Technical literature esp. Transactions of ASME.</b></li> </ol>
	Supplementary literature	<ol style="list-style-type: none"> <li>1. Janiczek R. S., <i>Eksplotacja elektrowni parowych</i>, WNT, Warszawa 1992.</li> <li>2. Orłowski Z., <i>Diagnostyka w życiu turbin parowych</i>, WNT, Warszawa 2001.</li> <li>3. Szuman W., <i>Urządzenia pomocnicze elektrowni parowych</i>, WNT, Warszawa 1962.</li> <li>4. Bunin W. I., <i>Eksplotacja turbin parowych</i>, WNT, Warszawa 1956.</li> <li>5. Gundlach W. R., <i>Maszyny przepływowe</i>, T.1-3, PWN, Warszawa 1971.</li> <li>6. Łączkowski R., <i>Drgania elementów turbin cieplnych</i>, WNT, Warszawa 1974.</li> <li>7. Jakubik A., <i>Uszkodzenia niemechaniczne urządzeń cieplnych elektrowni</i>, WNT, Warszawa 1974.</li> <li>8. Gajewski T., Lesikiewicz A., Szymanik R., <i>Przepływowe silniki odrzutowe</i>, WNT, Warszawa 1975.</li> <li>9. Gajewski K., <i>Turbinowe napędy samochodów</i>, WNT, Warszawa 1978.</li> </ol>
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Name criteria of energetical effectiveness of ship power plant presented to you	
Work placement	Not applicable	