GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00057307		
Field of study	Ocean Engineering		
Date of commencement of studies	February 2023	Academic year of realisation of subject	2023/2024
Education level	second-cycle studies	Subject group	Optional subject group Subject group related to scientific research in the field of study
Mode of study	Part-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	Polish
Semester of study	2	ECTS credits	5.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Zakład Projektowania Okrętu -> Institute of Ocean Engineering and Ship Technology -> Faculty of Mechanical Engineering and Ship Technology		
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Maciej Reichel	
	Teachers		

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	18.0	0.0	9.0	18.0	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

To familiarize the students with the knowledge regarding to: a scope of ship control systems; devices supporting of ships steering; cooperation between propellers, rudders and thrusters; an identification methods of navigational environmental parameters; a concept of dynamic positioning for offshore mobile units

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K7_W06] has an organized, widened knowledge on engineering methods and design tools allowing the conducting of advanced projects within the construction and operation of ocean technology objects and systems	Student becomes familiar with a structure of control systems applied in ship's dynamic positioning, working principles of dynamic positioning components, and operational modes of DP system work	[SW1] Assessment of factual knowledge
[K7_W05] has an organized, widened knowledge on design, construction and operation of ocean technology objects and systems	Student apply known working principles of dynamic positioning components and regimes of its work to carry out series of laboratory exercises connected with position keeping of the floating offshore unit	[SW1] Assessment of factual knowledge
[K7_U04] can apply mathematical methods and models and computer simulations to analyse, design, and assess the functioning of ocean technology objects and systems and their elements	Student recognizes and knows the ship control systems and physical processes connected with the ship movement. He is able to identify the parameters of navigational environmental and arrange the ship movement trajectory	[SU2] Assessment of ability to analyse information

Subject contents	Fundamentals of navigation (speed and course of the vessel; coastal navigation; practical astronavigation; radio navigation Positioning of floating-introduction Dynamic positioning system of ships Satellite navigation systems Reference systems dynamic positioning Cooperation steering gear, main drive thrusters, rudders and the other thrusters with a floating Side effects of the propeller Interoperability of the rudder and screws Interoperability of the rudder, propeller and rudder Design solutions drive contemporary craft Drive systems and electro-hydraulic control of contemporary craft Disruption acting on the vessel and from the wind, wave and sea current The method of calculation (determination) of thrust forces from the wind, wave and current sea craft Maintaining the position of the item and specifying the size and direction of the interacting forces: - system movements of their own unit - sensors control orientation (of the course) - size and direction of thrust force measurement system - control system Dynamic positioning task Requirements and classes of dynamic positioning systems Operating modes of dynamic positioning vessels
Prerequisites and co-requisites	
Assessment methods and criteria	

Subject passing criteria	Passing threshold	Percentage of the final grade
workout	60.0%	25.0%
laboratory	60.0%	25.0%
lectures – test	60.0%	50.0%

Recommended reading	Basic literature	Introduction to Dynamic Positioning (2010). International Marine Contractors Association. Bray D., Dynamic positioning, Oilfield Publications, 2003.
	Supplementary literature	Tarełko W. Power Take-off Systems of Offshore Rig Power Plants. Journal of Polish CIMAC. Vol. 5 No 1. 2010. pp. 187-198
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	