GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Actuators in Control Systems - laboratory, PG_00047582
Field of study	Automatic Control, Cybernetics and Robotics

Date of commencement of studies	October 2020	Academic year of realisation of subject	2021/2022
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study 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	2	Language of instruction	Polish
Semester of study	4	ECTS credits	1.0
Learning profile	general academic profile	Assessment form	assessment

Conducting unit	Department of Marine Electronic Systems -> Faculty of Electronics, Telecommunications and Informatics

Name and surname of lecturer (lecturers)	Subject supervisor	mgr inż. Aleksander Schmidt
	Teachers	dr inż. Jan Schmidt mgr inż. Aleksander Schmidt

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	15.0	0.0	0.0	15
	E-learning hours included: 0.0						
	Adresy na platformie eNauczanie:						

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	15	1.0	9.0	25

Subject objectives	To get to know basic parameters and features of actuators - i.e. the commutateds DC engines and BLDC engines, stepping motors and relays (contact and non contact switching devices) - and methods of their measurement .

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_U21] can individually carry out an analysis of a managing and controlling problem and is able to individually design, tune and operate automatic regulation and control systems, and use computers to control and monitor dynamic systems	The student has knowledge about a methods of design and operation automation systems using executive elements.	[SU4] Assessment of ability to use methods and tools
	[K6_U02] can perform tasks related to the field of study in an innovative way as well as solve complex and nontypical problems, applying knowledge of physics, in changing and not fully predictable conditions	The student has knowledge about principles of operation executive elements.	[SU3] Assessment of ability to use knowledge gained from the subject
	[K6_U09] can carry out a critical analysis of the functioning of existing technical solutions and assess these solutions, as well as apply experience related to the maintenance of technical systems, devices and facilities typical for the field of studies, gained in the professional engineering environment	The student knows the functionalities of existing technical solutions related to the field of study.	[SU2] Assessment of ability to analyse information
	[K6_U03] can design, according to required specifications, and make a simple device, facility, system or carry out a process, specific to the field of study, using suitable methods, techniques, tools and materials, following engineering standards and norms, applying technologies specific to the field of study and experience gained in the professional engineering environment	Student is able to make a simple design of device or system design according to the given specification.	[SU4] Assessment of ability to use methods and tools

Subject contents	1. Measurements of fundamental parameters of contact and non contact switching devices 2. Parameters of discrete drive with stepping motor (controller types, full-, half-, and micro-step work) 3. Testing of dynamic characteristics of electric DC servo-motor 4. Analysis of electric motors rotational speed controller
Prerequisites and co-requisites	

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Reports of laboratory exercises	50.0%	100.0%

Recommended reading	Basic literature	1. Jerzy Kostro "Elementy, urządzenia i układy automatyki" - Czytelnia na Wydziale ETI 2. Silniki krokowe i sterowniki silników krokowych. Instrukcja obsługi sterownika SMC64 - opis w sieci http://www.wobit.com.pl. 3. Dane katalogowe przekaźników półprzewodnikowych SSR (http://sharp-world.com; http://www.irf.com)
	Supplementary literature	No requirements
	eResources addresses	

Example issues/ example questions/ tasks being completed	1. Measurement of DC motor dynamic characteristics 2. Advantages and disadvantages of micro-step operation of a two-phase, hybrid stepper motor. 3. Basic differences of mechanical and semiconductor relays.
Work placement	Not applicable