

Subject card

There are new generation analogue and digital devices (such as digital oscilloscopes with memory, power supplies and digital signal generators) available in the laboratory. The students can prepare themselves in advanced to laboratory exercises by reading listed literatures and laboratory instructions. Prerequisites and co-requisites Knowledge of the subject Physics Knowledge of electrical circuits course										
Date of commencement of studies Date of commencement of studies Education level first-cycle studies Subject group first-cycle studies Subject group Mode of study Part-lime studies Mode of delivery Year of study 1 Language of instruction Poish Semester of study 1 Language of instruction Poish Semester of study 1 Language of instruction Poish Semester of study 2 ECTS credits 2.0 Learning profile Conducting unit Name and surname of lecturer (lecturers) Lesson types and methods of instruction Lesson types and methods of instruction Lesson types and methods of instruction Learning activity and number of study hours Learning activity and number of study hours Learning activity and number of study Adress na platformic enhanciane: Learning activity Adress na platformic enhanciane: Learning outcomes Learning activity Adress na platformic sociected physical phenomena, the measurement of salected physical quantities and the development of reports from research, along with a discussion of the results. KR_WO2 Able to cooperate in a group in delivery of characteristic quantities. He is able to actively participation in the laboratorian measurement of salected physical quantities and via development of reports from research, along with a discussion of the results. KR_WO3 Can use the knowledge from various models to analyze and measurement in the liboratorium KR_WO3 Can use the knowledge from various models to analyze and measurement of facilual knowledge in the determining the order and imprementation of basics. Subject contents The purpose of laboratory exercises it familiants exhibit so measurement of salected physical quantities have been determined the work of the teal (Sk3) Assessment of ability to exercise to analyze and content of propure for the measurements in the liboratorium K6_VO2 Able to cooperate in a group in determined the work of the teal (Sk3) Assessment of ability to exercise to analyze and content of propure for the measurements and profile and the measu	Subject name and code	Physics - Laboratory, PG_00038391								
Education level first-cycle studies Subject group Chilgatory subject group in the field of study Part-time studies Mode of delivery at the university Vear of study 1 Language of instruction Polish	Field of study	Electrical Engineering	9							
Mode of study Part-time studies Mode of delivery Are of study Year of study 1 Language of instruction Polish Semester of study 2 ECTS credits 2.0 Learning profile General academic profile Assessment form Assessment Subject supervisor Are click the subject subj		October 2021				2021/2022				
Year of study 1 Language of instruction Polish Semester of study 2 ECTS credits 2.0 Learning profile general academic profile Assessment form assessment Conducting unit Department of Control Systems Engineering > Faculty of Electrical and Control Engineering Name and surname of lecturer (lecturers) Teachers drinz. Adam Myhski of inz. Adam Myhski Lesson types and methods of instruction Lesson types and methods of instruction Lesson types and methods of instruction E-learning hours included: 0.0 Adresy na platformie eNauczanie: Learning activity and number of study hours Learning activity and number of study hours Learning activity and number of study hours Learning activity Learning activity and number of study hours Learning activity and number of study hours Course outcome Course outcome Reg. W02 Able discuss the research of the physical phenomena, the measurement of selected physical quantities and the development of reports from research, along with a discussion of the results. Course outcome Keg. W02 Able discuss the essence of the physical phenomena studied, and evaluate the results of observations and perform the search of the physical phenomena studied, make observations and perform measurements of characteristic (surantities. He is able to active quantities the in the isbortorulum Keg. W03 Can use the knowledge from various modules to analyze and evaluate the results of observations and perform measurements of characteristic (surantities. He is able to active quantities the in the isbortorulum of the search of the learning of the search of the learning of the phenomena studied, make observations and perform of the search of the learning of the phenomena studied, make observations and perform of the search of the physical quantities and the search of the phenomena studied, make observations and perform of the physical quantities of the phenomena studied, make observations and perform of the physical quantities of the phenomena studied, make observations and perform of the phys	Education level	first-cycle studies		•		Obligatory subject group in the field of study				
Semester of study 2 ECTS credits 2.0 assessment 2.0 asse	Mode of study	Part-time studies		Mode of delivery			at the university			
Learning profile	Year of study	1		Language of instruction			Polish			
Department of Control Systems Engineering > Faculty of Electrical and Control Engineering	Semester of study	2		ECTS credits			2.0			
Name and surmame of lecturer (lecturers) Lesson types and methods of instruction Lesson types and methods of instruction Learning activity and number of study hours Learning activity and number of study hours Learning study hours Learning activity and number of study hours Learning activity and number of study hours Subject objectives Learning activity and number of study hours Subject objectives Learning outcomes Course outcome Course outcome Course outcome Subject outcome Subject outcome Subject outcome K6_W02 Able discuss the essence of the physical phenomena studied and assess the quality of the obtained results K6_W03 Can use the knowledge from various modules to analyze and evaluate the results of observations and measurements in the liabortorulum K6_U02 He can understand the physical and measurements in the liabortorulum K6_U02 Able to cooperate in a group in determining the order and subject outled the team studied, make observations and perform measurements of characteristic quantities. He is able to actively participate in the work of the team K6_K02 Able to cooperate in a group in determining the order and organize work K6_K02 Able to cooperate in a group in determining the order and organize work ISK1] Assessment of ability to determine the value of the teams K6_K02 Able to cooperate in a group in determining the order and organize work ISK1] Assessment of ability to sements of characteristic quantities. He is able to actively participate in the work of the teams K6_K02 Able to cooperate in a group in determining the order and organize work ISK1] Assessment of ability to genize work instructions to determine the value of the measurement such and propers of laboratory exercises is familiarize students with experimental methods of sected physical phenomena. The students learn about basic measuring instruments used in physics. The students prepare preliminary calculations to determine the value of the measured physics. The students prepare preliminary calculations to	Learning profile	general academic profile		Assessment form			assessment			
Teachers drinez. Adam Miyński Lesson types and methods of instruction Number of study 0.0 0.0 20.0 0.0 0.0 0.0 20	Conducting unit	Department of Control Systems Engineering -> Faculty of Electrical and Control Engineering								
Lesson types and methods of instruction Lesson types Lecture Tutorial Laboratory Project Seminar SUM		<u> </u>		dr inż. Adam Młyński						
Of instruction	of lecturer (lecturers)	Teachers		dr inż. Adam	Młyński					
Learning activity and number of study hours Learning activity Participation in didactic classes included in study Participation in consultation hours Self-study SUM Number of study 20 2.0 28.0 50 50 2.0 28.0 50 28.0 50 28.0 50 28.0 50 28.0 50 28.0 50 28.0 50 50 50 50 50 50 50			+		†		t		+	
Adresy na platformie eNauczanie: Learning activity and number of study hours Learning activity Carricopation in included in study plan Consultation hours Self-study SUM	of instruction	,	0.0	0.0	20.0	0.0		0.0	20	
Learning activity and number of study hours Number of study hours Number of study hours 20										
Course outcome Subject objectives Design of experiments selected physical phenomena, the measurement of selected physical quantities and the development of reports from research, along with a discussion of the results. Course outcome Subject outcome Method of verification Method o		Adresy na platformie eNauczanie:								
Design of experiments selected physical phenomena, the measurement of selected physical quantities and the development of reports from research, along with a discussion of the results. Course outcome	Learning activity and number of study hours	classes includ					Self-study		SUM	
the development of reports from research, along with a discussion of the results. Course outcome Subject outcome Method of verification		Number of study 20			2.0		28.0		50	
K6_W02	Subject objectives									
Subject contents Subject contents Subject contents Subject contents The purpose of laboratory exercises is familiarize with measurement system and perform the measurements. The students learn about basic measured physical subdents familiarize with measuring of material, kinetic, dynamic, acoustic and electric quantities and glital signal generators) was pread to laboratory exercises and co-requisites Frequencies Subject Physics Subject Physic	Learning outcomes	Course outcome Subject outcome Metho					Method of veri	fication		
Various modules to analyze and evaluate the results of observations and measurements in the labortorulum		K6_W02		physical phenomena studied and assess the quality of the obtained			contained in written work and			
Sense of the phenomena studied, make observations and perform measurements of characteristic quantities. He is able to actively participate in the work of the team		K6_W03		various modules to analyze and evaluate the results of observations and measurements						
Subject contents The purpose of laboratory exercises is familiarize students with experimental methods of selected physical phenomena. The students learn about basic measuring instruments used in physics. The students prepare preliminary calculations to determine the value of the measured physical quantities, then assemble the measurement system and perform the experiment. There are 9 laboratory exercises in the course. The students familiarize with measuring of material, kinetic, dynamic, acoustic and electric quantities parameters. There are new generation analogue and digital devices (such as digital oscilloscopes with memory, power supplies and digital signal generators) available in the laboratory. The students can prepare themselves in advanced to laboratory exercises by reading listed literatures and laboratory instructions. Prerequisites Anowledge of the subject Physics Knowledge of electrical circuits course		K6_U02		sense of the phenomena studied, make observations and perform measurements of characteristic quantities. He is able to actively			fulfilment [SU4] Assessment of ability to			
phenomena. The students learn about basic measuring instruments used in physics. The students prepare preliminary calculations to determine the value of the measured physical quantities, then assemble the measurement system and perform the experiment. There are 9 laboratory exercises in the course. The students familiarize with measuring of material, kinetic, dynamic, acoustic and electric quantities parameters. There are new generation analogue and digital devices (such as digital oscilloscopes with memory, power supplies and digital signal generators) available in the laboratory. The students can prepare themselves in advanced to laboratory exercises by reading listed literatures and laboratory instructions. Prerequisites Knowledge of the subject Physics Knowledge of electrical circuits course		K6_K02		determining the order and			organize work [SK1] Assessment of group work			
and co-requisites Knowledge of electrical circuits course	Subject contents	phenomena. The students learn about basic measuring instruments used in physics. The students prepare preliminary calculations to determine the value of the measured physical quantities, then assemble the measurement system and perform the experiment. There are 9 laboratory exercises in the course. The students familiarize with measuring of material, kinetic, dynamic, acoustic and electric quantities parameters. There are new generation analogue and digital devices (such as digital oscilloscopes with memory, power supplies and digital signal generators) available in the laboratory. The students can prepare themselves in								
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Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade					
and criteria	Written reports of lab	100.0%	35.0%					
	Ongoing control of theoretical preparation for exercises	60.0%	65.0%					
Recommended reading	Basic literature	ic literature 1. Bobrowski Cz.: Fizyka krótki kurs. WNT Warszawa 2007. 2. Kozłowski K., Kolka W.: Ćwiczenia laboratoryjne z fizyki. Wydawnictwo PG. Gdańsk 1990. 3. Orear J.: Fizyka T.1 i2. WNT Warszawa 2008. 4. Halliday D., Resnich R.: Fizyka T.1 i 2. PWN Warszawa 2001 5. Bolkowski S.: Teoria obwodów elektrycznych. WNT Warszawa 2009. 6. Kurdziel R.: Podstawy elektrotechniki. WNT Warszawa 1973.						
	Supplementary literature	Feynman R.P., Leighton R. B., Sands M.: Feynmana wykłady z fizyki. PWN Warszawa 2007.						
	eResources addresses							
Example issues/ example questions/ tasks being completed	Provide definitions of Ohm's law and, in General, to discuss methods of solving DC circuits.							
	Provide definitions of Ohm's law and	in General, to discuss methods of solving AC circuits.						
	Describe how the distribution of forces on an incline and the applicants ' instructions are perceptibly.							
	Describe the method of determining the gravitational acceleration using a system of inclined plane							
	What are the conditions for the existence of a standing wave?							
	Describe the model of static and dynamic non-linear element in the operating point. What elements are included in this model, what is their geometric interpretation.							
	Give the equivalent circuit of a transformer with a ferromagnetic core. Describe the parameters of this scheme.							
Work placement	Not applicable							

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