



Subject card

Subject name and code	Metrology - laboratory, PG_00047562						
Field of study	Automatic Control, Cybernetics and Robotics						
Date of commencement of studies	October 2025	Academic year of realisation of subject			2026/2027		
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	3	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department Of Metrology And Optoelectronics -> Faculty Of Electronics Telecommunications And Informatics -> Wydział Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Sylwia Babicz-Kiewlicz					
	Teachers	dr inż. Sylwia Babicz-Kiewlicz					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	0.0	30.0	0.0	0.0	30
	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	30	2.0		18.0		50
Subject objectives	The aim is to teach: performing measurements of basic electrical quantities: voltage, current, frequency, resistance, capacitance, inductance; operating and making measurements with a digital oscilloscope; setting up, making measurements, processing of measurement data on computer-controlled measurement systems.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
Subject contents	1. Introduction: syllabus, characteristic of lab (one student - one stand, computer monitoring of student's activity), principles of work and re-ports 2. Familiarization with basic instruments 3. Investigation and calibration of basic measuring instruments of electrical quantities, analog and digital having a PC link 4. Measurements of basic electrical quantities: voltage, current, resistance, power and electrical energy (using electronic P/f converter) 5. Study of a digital storage oscilloscope 6. Use of oscilloscopes to measure basic electrical quantities: voltage, pulse parameters, observation of device characteristics, observation of waveforms in digital circuits 7. Investigation of electronic timer-counter features 8. Use of digital methods and oscilloscope for measurements of time, frequency and phase 9. Investigations of properties and modes of operation of measuring sys-tem: bench multimeter, arbitrary function generator, hand-held multimeter 10. Investigation of dual slope integration ADC and voltage to frequency converter in above mentioned system 11. Investigation and calibration of AC/DC transducers: average-responding, peak-responding, AC low and high frequencies 12. Measurement of the RMS value of different types of waveforms with true RMS/DC conversion technique, average-responding instrument and with DSP method 13. Measurements of high and very low resistances with Wheatstone and Thomson bridges as well as using DMM with 4-wire Kelvin connectors 14. Measurements of impedance parameters of RLC components 15. Work out of outstanding exercises 16. Acceptation of student's works						

Prerequisites and co-requisites	<p>It is obligatory to read the Health and Safety Rules and the Regulations of the Metrology Laboratory. Teacher determines the form of verification. Without familiarizing yourself with the Health and Safety Rules and the Laboratory Regulations, it is not possible to start classes in the metrology laboratory.</p> <p><0;60>% 2</p> <p>(60; 68>% 3</p> <p>(68; 76>% 3,5</p> <p>(76; 84>% 4</p> <p>(84; 92>% 4,5</p> <p>(92; 100>% 5</p>														
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="451 685 794 712">Subject passing criteria</th> <th data-bbox="794 685 1139 712">Passing threshold</th> <th data-bbox="1139 685 1487 712">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="451 712 794 745">Activity on classes</td> <td data-bbox="794 712 1139 745">0.0%</td> <td data-bbox="1139 712 1487 745">60.0%</td> </tr> <tr> <td data-bbox="451 745 794 779">Tests</td> <td data-bbox="794 745 1139 779">0.0%</td> <td data-bbox="1139 745 1487 779">20.0%</td> </tr> <tr> <td data-bbox="451 779 794 819">Homework</td> <td data-bbox="794 779 1139 819">0.0%</td> <td data-bbox="1139 779 1487 819">20.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Activity on classes	0.0%	60.0%	Tests	0.0%	20.0%	Homework	0.0%	20.0%
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Example issues/ example questions/ tasks being completed															
Work placement	Not applicable														

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