

## COURSE DESCRIPTION CARD – SPECIMEN

Faculty of Electrical Engineering									
Field of study	Automatics and Robotics							Degree level and programme type	Bachelor's degree
Specialization/ diploma path	-							Study profile	-
Course name	Computer-Based Measurement Systems							Course code	IS-FEE-10058W
								Course type	elective
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	winter
	15			30				No. of ECTS credits	3
Entry requirements	Mathematics I, II, Signals Theory or equivalent								
Course objectives	To familiarize students with the methods and ways of measurements of physical quantities using the computer-based measurement system. Presentation of the methods of measurement signals processing, their acquisition and graphical representation.								
Course content	<p><b>Lecture:</b> Fundamental measurement signals and sensors used in automation. Characteristics of measurement signals. Filtration methods and analysis of measurement errors. The rules of a program implementation in the LabView environment. The basic blocks of the LabView package. Control of measuring devices by a computer. Acquisition of measurement data. Analysis and presentation of data. Graphical user interface.</p> <p><b>Project:</b> Measurement, acquisition and representation of real digital and analogue signals. Selection of measurement methodology and of construction of filters applied to measurement signals. Creating dedicated applications for acquisition, processing and representation of measurement signals.</p>								
Teaching methods	Power-Point presentations, LabView software, instructions								
Assessment method	lecture – written test; project – project implementation, presentation and discussion								
Symbol of learning outcome	Learning outcomes							Reference to the learning outcomes for the field of study	
LO1	Lists, classifies and characterizes measurement signals and elements of a computer measuring system								
LO2	Selects a proper method for measurement of elementary physical parameters.								
LO3	Presents properly measurement results.								

<b>LO4</b>	<b>Is able to implement designed algorithms for acquisition and processing of measurement signals.</b>		
<b>Symbol of learning outcome</b>	<b>Methods of assessing the learning outcomes</b>	<b>Type of tuition during which the outcome is assessed</b>	
<b>LO1</b>	<b>L: written test</b>	<b>L</b>	
<b>LO2</b>	<b>L: written test, P: project evaluation, activity on classes</b>	<b>L, P</b>	
<b>LO3</b>	<b>L: written test, P: project evaluation, activity on classes</b>	<b>L, P</b>	
<b>LO4</b>	<b>P: project evaluation, activity on classes</b>	<b>P</b>	
<b>Student workload (in hours)</b>		<b>No. of hours</b>	
<b>Calculation</b>	<b>Participation in lectures</b>	<b>15</b>	
	<b>Participation in project classes</b>	<b>30</b>	
	<b>Preparation for exams/tests</b>	<b>10</b>	
	<b>Working on projects, reports, etc.</b>	<b>25</b>	
	<b>Participation in consultations</b>	<b>3</b>	
<b>TOTAL:</b>		<b>80</b>	
<b>Quantitative indicators</b>		<b>HOURS</b>	<b>No. of ECTS credits</b>
<b>Student workload – activities that require direct teacher participation</b>		<b>48</b>	<b>1,5</b>
<b>Student workload – practical activities</b>		<b>55</b>	<b>2</b>
<b>Basic references</b>	<ol style="list-style-type: none"> <li>1. Training materials of National Instruments (online).</li> <li>2. Pedro Ponce-Cruz, Fernando D. Ramírez-Figueroa. : Intelligent control systems with LabVIEW, London : Springer-Verlag, 2010.</li> <li>3. Clark Cory L. LabView digital signal processing and digital communication, McGraw-Hill, New York, 2005.</li> <li>4. Janusz Walczak, Dariusz Grabowski, Marcin Maciążek: Introduction to digital signal processing, Gliwice : Wydaw. Politechniki Śląskiej, 2013.</li> </ol>		
<b>Supplementary references</b>	<ol style="list-style-type: none"> <li>1. LabView Core 1 and 2, course manual and exercises. National Instruments Corporation, 2009.</li> </ol>		
<b>Organisational unit conducting the course</b>	<b>Department of Automatic Control and Robotics</b>	<b>Date of issuing the programme</b>	
<b>Author of the programme</b>	<b>Michał Ostaszewski, PhD</b>	<b>17.02.2020</b>	

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work,

S – seminar