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	С	LC	Р	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	Lecture: 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. Project: 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.									
Teaching methods	Power-Point presentations, LabView software, instructions									
Assessment method	lecture – written test; project – project implementation, presentation and discussion									
Symbol of learning outcome	Reference to the Learning outcomes learning outcomes for the field of study									
L01	Lists, classifies and characterizes measurement signals and elements of a computer measuring system									
LO2	Selec	Selects a proper method for measurement of elementary physical parameters.								
LO3		Presents properly measurement results.								

Symbol of learning outcome Methods of assessing the learning outcomes Type of tuition during which the outcome LO1 L: written test L L L L L L L L L									
Lot L: written test L	LO4	Is able to implement designed algorithms for acquisition and processing of measurement signals.							
Learning outcome	Symbol of		Type of tuition during						
outcome assessed LO1 L: written test L LO2 L: written test, P: project evaluation, activity on classes L, P LO3 L: written test, P: project evaluation, activity on classes L, P LO4 P: project evaluation, activity on classes P Calculation Student workload (in hours) No. of hours Participation in lectures 15 Participation in project classes 30 Preparation for exams/tests 10 Working on projects, reports, etc. 25 Participation in consultations 3 TOTAL: 80 Student workload – activities that require direct teacher participation 48 1,5 Student workload – activities that require direct teacher participation 48 1,5 Student workload – activities that require direct teacher participation 48 1,5 Student workload – practical activities 55 2 1. Training materials of National Instruments (online). 2. Pedro Ponce-Cruz, Fernando D. Ramirez-Figueroa. : Intelligent control systems with LabVIEW, London : Springer-Verlag, 2010.	_	Methods of assessing the learning outcomes	which the outcome is						
LO2	_	3							
LO3 L: written test, P: project evaluation, activity on classes L, P LO4 P: project evaluation, activity on classes P Student workload (in hours) No. of hours Participation in lectures 15 Participation in project classes 30 Preparation for exams/tests 10 Working on projects, reports, etc. 25 Participation in consultations 3 TOTAL: 80 Quantitative indicators HOURS ECTS credit Student workload – activities that require direct teacher participation 48 1,5 Student workload – practical activities 55 2 1. Training materials of National Instruments (online). 2. Pedro Ponce-Cruz, Fernando D. Ramírez-Figueroa.: Intelligent control systems with LabVIEW, London: Springer-Verlag, 2010. 3. Clark Cory L. LabView digital signal processing and digital communication, MoGraw-Hill, New York, 2005. 4. Janusz Walczak, Dariusz Grabowski, Marcin Maciążek: Introduction to digital signal processing, Gliwice: Wydaw. Politechniki Śląskiej, 2013. Supplementary references Organisational unit conducting the course Department of Automatic Control and Robotics Date of issuing the programme	LO1	L: written test	L						
Student workload (in hours) No. of hours	LO2	L: written test, P: project evaluation, activity on classes	L, P						
Student workload (in hours) Participation in lectures	LO3	L: written test, P: project evaluation, activity on classes	L, P						
Calculation Participation in lectures Participation in project classes Preparation for exams/tests Working on projects, reports, etc. Participation in consultations Quantitative indicators Roo. or ECTS Credit: Student workload – activities that require direct teacher participation Student workload – practical activities Student workload – practical activities 1. Training materials of National Instruments (online). Pedro Ponce-Cruz, Fernando D. Ramírez-Figueroa.: Intelligent control systems with LabVIEW, London: Springer-Verlag, 2010. Cark Cory L. LabView digital signal processing and digital communication, MoGraw-Hill, New York, 2005. A. Janusz Walczak, Dariusz Grabowski, Marcin Maciążek: Introduction to digital signal processing, Gliwice: Wydaw. Politechniki Śląskiej, 2013. Supplementary references Organisational unit conducting the course Department of Automatic Control and Robotics Date of issuing the programme	LO4	P: project evaluation, activity on classes	Р						
Participation in project classes Preparation for exams/tests Working on projects, reports, etc. Participation in consultations 3 TOTAL: 80 Quantitative indicators HOURS Student workload – activities that require direct teacher participation Student workload – practical activities 55 2 1. Training materials of National Instruments (online). 2. Pedro Ponce-Cruz, Fernando D. Ramírez-Figueroa.: Intelligent control systems with LabVIEW, London: Springer-Verlag, 2010. 3. Clark Cory L. LabView digital signal processing and digital communication, MoGraw-Hill, New York, 2005. 4. Janusz Walczak, Dariusz Grabowski, Marcin Maciążek: Introduction to digital signal processing, Gliwice: Wydaw. Politechniki Śląskiej, 2013. Supplementary references Organisational unit conducting the course Date of issuing the programme		No. of hours							
Preparation for exams/tests 10	Calculation	Participation in lectures	15						
Working on projects, reports, etc. 25		Participation in project classes	30						
Working on projects, reports, etc. Participation in consultations TOTAL: 80 Quantitative indicators HOURS Credit Student workload – activities that require direct teacher participation Student workload – practical activities 55 2 1. Training materials of National Instruments (online). 2. Pedro Ponce-Cruz, Fernando D. Ramírez-Figueroa. : Intelligent control systems with LabVIEW, London : Springer-Verlag, 2010. 3. Clark Cory L. LabView digital signal processing and digital communication, MoGraw-Hill, New York, 2005. 4. Janusz Walczak, Dariusz Grabowski, Marcin Maciążek: Introduction to digital signal processing, Gliwice : Wydaw. Politechniki Śląskiej, 2013. Supplementary references Organisational unit conducting the course Department of Automatic Control and Robotics Date of issuing the programme			10						
Quantitative indicators Coredit		Working on projects, reports, etc.	25						
Round		•	3						
Student workload – activities that require direct teacher participation 48 1,5		TOTAL:							
Student workload – practical activities 55 2 1. Training materials of National Instruments (online). 2. Pedro Ponce-Cruz, Fernando D. Ramírez-Figueroa. : Intelligent control systems with LabVIEW, London : Springer-Verlag, 2010. 3. Clark Cory L. LabView digital signal processing and digital communication, MoGraw-Hill, New York, 2005. 4. Janusz Walczak, Dariusz Grabowski, Marcin Maciążek: Introduction to digital signal processing, Gliwice : Wydaw. Politechniki Śląskiej, 2013. Supplementary references Organisational unit conducting the course Department of Automatic Control and Robotics Date of issuing the programme		HOURS	No. of ECTS credits						
1. Training materials of National Instruments (online). 2. Pedro Ponce-Cruz, Fernando D. Ramírez-Figueroa. : Intelligent control systems with LabVIEW, London : Springer-Verlag, 2010. 3. Clark Cory L. LabView digital signal processing and digital communication, MoGraw-Hill, New York, 2005. 4. Janusz Walczak, Dariusz Grabowski, Marcin Maciążek: Introduction to digital signal processing, Gliwice : Wydaw. Politechniki Śląskiej, 2013. Supplementary references Corporation, 2009. Organisational unit conducting the course Department of Automatic Control and Robotics Date of issuing the programme	Student wor	48	1,5						
2. Pedro Ponce-Cruz, Fernando D. Ramírez-Figueroa. : Intelligent control systems with LabVIEW, London : Springer-Verlag, 2010. 3. Clark Cory L. LabView digital signal processing and digital communication, MoGraw-Hill, New York, 2005. 4. Janusz Walczak, Dariusz Grabowski, Marcin Maciążek: Introduction to digital signal processing, Gliwice : Wydaw. Politechniki Śląskiej, 2013. Supplementary references Organisational unit conducting the course Department of Automatic Control and Robotics Date of issuing the programme		55	2						
references Corporation, 2009. Organisational unit conducting the course Department of Automatic Control and Robotics programme	Basic references	 Pedro Ponce-Cruz, Fernando D. Ramírez-Figueroa. : Intelligent control systems with LabVIEW, London : Springer-Verlag, 2010. Clark Cory L. LabView digital signal processing and digital communication, MoGraw-Hill, New York, 2005. Janusz Walczak, Dariusz Grabowski, Marcin Maciążek: Introduction to digital 							
Organisational unit conducting the course Department of Automatic Control and Robotics programme Date of issuing the programme	Supplementary	1. LabView Core 1 and 2, course manual and exercises. National Instruments							
unit conducting the course Department of Automatic Control and Robotics programme	references	Corporation, 2009.							
	unit conducting	Department of Automatic Control and Robotics	Date of issuing the programme						
Author of the programme Michał Ostaszewski, PhD 17.02.2020 L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field wo									

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

S – seminar