COURSE DESCRIPTION CARD – SPECIMEN

Faculty of Electrical Engineering									
Field of study	**Electrical and Electronic Engineering**							**Degree level and programme type**	**Bachelor's degree**
Specialization/ diploma path	**-**							**Study profile**	**-**
Course name	**Microprocessor Technique and Microcontrollers**							**Course code**	**IS-FEE10009S**
								Course type	**elective**
Forms and number of hours of tuition	**L**	**C**	**LC**	**P**	**SW**	**FW**	**S**	**Semester**	**summer**
	30		**30**					**No. of ECTS credits**	**6**
Entry requirements	**-**								
Course objectives	Knowledge about the basic problems of the microprocessor technique and microcontrollers. Skills on programming of microprocessor systems in low-level and high-level languages.								
Course content	Lecture: Binary arithmetic. Basic topics of the microprocessor engineering. Microprocessor system structures and main components: processors, memories, basic peripheral devices, standard buses, additional circuits. Interrupt systems. Methods of input/output device service. Input/output binary and analogue devices. Exemplary microcontroller family: standard structure, instruction list, peripherals, interrupts, extensions. Laboratory classes: Practical exercises in programming of basic algorithms and I/O device service in machine- and high-level language.								
Teaching methods	Lecture: presentations Laboratory classes: set of exercises								
Assessment method	Written exam and reports								
Symbol of learning outcome	**Learning outcomes**								**Reference to the learning outcomes for the field of study**
LO1	describes the activity of microprocessor, microcontrollers and whole microprocessor system								
LO2	distinguishes: types of processors, interrupt systems, semiconductor memories, peripheral device service techniques								
LO3	uses suitable programming tools								
LO4	writes software servicing the microcontroller I/O devices								
LO5	writes software implementation of designed algorithm								
LO6									

Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed
LO1	written exam test on lecture content	L
LO2	written exam test on lecture content	L
LO3	evaluating the student's reports	LC
LO4	evaluating the student's reports and written tests	LC
LO5	evaluating the student's reports and written tests	LC
LO6		

Student workload (in hours)		No. of hours
Calculation	lecture attendance	30
	individual work on lecture topics	15
	preparation for exam	10
	participation in laboratory classes	30
	preparation for laboratory classes and drawing up reports	40
	participation in student-teacher sessions related to the classes	10
	preparation for laboratory classes tests	10
	exam and lab-classes tests attendance	5
	TOTAL:	150

Quantitative indicators	HOURS	No. of ECTS credits
Student workload – activities that require direct teacher participation	75	3
Student workload – practical activities	82	3

Basic references	*1. William Stallings: Computer Organization and Architecture, ISBN: 9780135160930; 896 p, 2019, Pearson.* *2. Muhammad Ali Mazidi, Sarmad Naimi, Sepehr Naimi: The AVR Microcontroller and Embedded Systems, ISBN: 0138003319; 781 p, 2011, Pearson/Prentice Hall.* *3. Stuart Ball: Embedded Microprocessor Systems, ISBN: 0750675349; 432 p, 2002, Elsevier Newnes.*
Supplementary references	*1. Lech Grodzki: Presentations for lecture. Updated each semester.* *2. Lech Grodzki: Manuals for laboratory classes. Updated each semester.*

Organisational unit conducting the course	Department of Control Engineering and Robotics	Date of issuing the programme
Author of the programme	Lech Grodzki, PhD Eng	15.02.2021

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