

COURSE DESCRIPTION CARD

Faculty of Electrical Engineering										
Field of study	Electronics and Telecommunication							Degree level and programme type	Bachelor's degree	
Specialization/ diploma path	-							Study profile	-	
Course name	Embedded Systems							Course code	IS-FEE-10043S	
								Course type	elective	
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	summer	
	15				15			No. of ECTS credits	3	
Entry requirements	-									
Course objectives	To acquaint students with embedded systems and to help them acquire practical skills in the configuration of embedded systems based on Linux.									
Course content	Commercial and technical reasons to use embedded systems. Generic architecture of embedded linux systems. Basic shell commands. Efficient tools to generate embedded Linux systems: crosstool-ng, busybox, buildroot, OpenWRT. Configuring and compiling the kernel. Booting a Linux system. Examples of use of embedded systems									
Teaching methods	lecture and specialization workshop									
Assessment method	lecture - test; specialisation workshop - evaluation of reports									
Symbol of learning outcome	Learning outcomes <i>After completing this subject student:</i>							Reference to the learning outcomes for the field of study		
LO1	has knowledge of the design and construction of embedded systems									
LO2	knows the tools for the installation and configuration of embedded systems,									
LO3	is able to design and implement an embedded system using appropriate methods, techniques and tools,									
LO4	is able to use available tools and develop their own tools and applications to extend the functionality of an embedded system.									
LO5										
Symbol of learning outcome	Methods of assessing the learning outcomes							Type of tuition during which the outcome is assessed		
LO1	tests on lecture content, evaluating students' reports							L, SW		
LO2	tests on lecture content, evaluating students' reports							L, SW		

LO3	evaluating students' reports, observation of work in class	SW	
LO4	evaluating students' reports, observation of work in class	SW	
LO5			
Student workload (in hours)		No. of hours	
Calculation	Lecture attendance:	15	
	Participation in specialisation workshop:	15	
	Required reading	15	
	Work on reports	15	
	Participation in student-teacher sessions:	4	
	Preparation for specialisation workshop:	15	
	Preparation for the final test:	4	
		TOTAL:	83
Quantitative indicators		HOURS	No. of ECTS credits
Student workload – activities that require direct teacher participation		35	1,5
Student workload – practical activities		59	2
Basic references	1. K. Yaghmour, J. Masters G. B. Yossef & P. Gerum: „Building Embedded Linux Systems”, O'Reilly Media, Cambridge 2008. 2. Gene Sally: „Pro Linux Embedded Systems”, Apress, New York 2009 3. Robert Love: „Linux Kernel Development”, Addison Wesley, New York 210		
Supplementary references	1. Simon Monk: „Raspberry Pi Cookbook: Software and Hardware Problems and Solutions”, O'Reilly Media, Boston 2016		
Organisational unit conducting the course	Department of Photonics, Electronics and Lighting Technology	Date of issuing the programme	
Author of the programme	Krzysztof Konopko, Ph. D.	16.01.2020	

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