

Faculty of Fundamental Problems of Technology						
COURSE CARD						
Name in polish	:	<b>Systemy Wbudowane w Bezpieczeństwie Komputerowym</b>				
Name in english	:	<b>Embedded Security Systems</b>				
Field of study	:	Computer Science				
Specialty (if applicable)	:					
Undergraduate degree and form of	:	masters, stationary				
Type of course	:	compulsory				
Course code	:	E2_BI02				
Group rate	:	Yes				
		Lectures	Exercides	Laboratory	Project	Seminar
Number of classes held in schools (ZZU)		30		30		
The total number of hours of student work-load (CNPS)		60		120		
Assesment		exam				
For a group of courses final course mark		X				
Number of ECTS credits		3		3		
including the number of points corresponding to the classes of practical (P)				3		
including the number of points corresponding occupations requiring direct contact (BK)		3		3		
<b>PREREQUISITES FOR KNOWLEDGE, SKILLS AND OTHER POWERS</b>						
Fluency in programming, designing efficient algorithms, estimating computational complexity. Basic knowledge on computer systems architecture, operating systems and communication protocols.						
<b>COURSE OBJECTIVES</b>						
<b>C1</b> presentation of architecture, limitations and fonalities of embedded systems used in security area						
<b>C2</b> developing programming skills concerning cryptographic smart cards and FPGA						

**COURSE LEARNING OUTCOMES**

The scope of the student's knowledge:

**W1**

**W2**

**W3**

**W4**

**W5**

The student skills:

**U1**

**U2**

**U3**

**U4**

**U5**

**U6**

The student's social competence:

**K1**

**K2**

**K3**

**K4**

**COURSE CONTENT**

Type of classes - lectures

Wy1	smart cards	6h
Wy2	HSM systems	2h
Wy3	programmable logic arrays	6h
Wy4	sensor systems	4h
Wy5	RFID tags	6h
Wy6	CUDA	6h

Type of classes - laboratory

Lab1	cryptographic smart cards	15h
Lab2	programming on FPGA	15h

Applied learning tools

1. Traditional lecture
2. Multimedia lecture
3. Solving tasks and problems
4. Creating programming projects
5. Consultation
6. Self-study students

EVALUATION OF THE EFFECTS OF EDUCATION ACHIEVEMENTS

Value	Number of training effect	Way to evaluate the effect of education
F1	W1-W5, K1-K4	
F2	U1-U6, K1-K4	
$P = \% * F1 + \% * F2$		

BASIC AND ADDITIONAL READING

1. Smart Card Handbook. Wolfgang Rankl, Wolfgang Effing, ISBN: 978-0-470-74367-6
2. Theoretical Aspects of Distributed Computing in Sensor Networks. Nikolettseas, Sotiris; Rolim, José, ISBN: 978-3-642-14848-4
3. Handbook of Sensor Networks. Yang Xiao, Hui Chen, Frank Haizhon Li, ISBN: 978-981-283-730-1
4. Embedded Systems Design with Platform FPGAs: Principles and Practices. Ronald Sass , Andrew G. Schmidt, ISBN:0123743338
5. Embedded Systems: A Contemporary Design Tool. James K. Peckol. ISBN: 0471721808
6. normative documents

SUPERVISOR OF COURSE

prof. Mirosław Kutylowski

RELATIONSHIP MATRIX EFFECTS OF EDUCATION FOR THE COURSE  
Embedded Security Systems  
WITH EFFECTS OF EDUCATION ON THE DIRECTION OF COMPUTER SCIENCE

Course training effect	Reference to the effect of the learning outcomes defined for the field of study and specialization (if applicable)	Objectives of the course**	The contents of the course**	Number of teaching tools**
W1	K2_W01 K2_W03 K2_W04 K2_W05 K2_W06 K2_W07 K2_W08 K2_W09 K2_W10 K2_W13_S2BKM	C1	Wy1-Wy6	1 2 5 6
W2	K2_W01 K2_W02 K2_W03 K2_W04 K2_W05 K2_W06 K2_W07 K2_W08 K2_W09 K2_W10 K2_W13_S2BKM	C1	Wy1-Wy6	1 2 5 6
W3	K2_W01 K2_W02 K2_W03 K2_W04 K2_W05 K2_W06 K2_W07 K2_W08 K2_W09 K2_W10 K2_W13_S2BKM	C1	Wy1-Wy6	1 2 5 6
W4	K2_W01 K2_W02 K2_W03 K2_W04 K2_W05 K2_W06 K2_W07 K2_W08 K2_W09 K2_W10 K2_W13_S2BKM	C1	Wy1-Wy6	1 2 5 6
W5	K2_W01 K2_W02 K2_W03 K2_W04 K2_W05 K2_W06 K2_W07 K2_W08 K2_W09 K2_W10	C1	Wy1-Wy6	1 2 5 6
U1	K2_U01 K2_U02 K2_U08 K2_U10 K2_U12 K2_U13 K2_U16 K2_U18 K2_U19 K2_U20 K2_U21 K2_U23_S2BKM	C1	Lab1-Lab2	3 4 5 6
U2	K2_U01 K2_U02 K2_U08 K2_U09 K2_U10 K2_U12 K2_U13 K2_U16 K2_U18 K2_U19 K2_U20 K2_U21 K2_U23_S2BKM	C1	Lab1-Lab2	3 4 5 6
U3	K2_U01 K2_U02 K2_U08 K2_U09 K2_U10 K2_U12 K2_U13 K2_U16 K2_U17 K2_U18 K2_U19 K2_U20 K2_U21 K2_U22 K2_U23_S2BKM	C1	Lab1-Lab2	3 4 5 6
U4	K2_U01 K2_U02 K2_U08 K2_U09 K2_U10 K2_U12 K2_U13 K2_U16 K2_U17 K2_U18 K2_U19 K2_U20 K2_U21 K2_U22 K2_U23_S2BKM K2_U24_S2BKM	C1	Lab1-Lab2	3 4 5 6
U5	K2_U01 K2_U02 K2_U08 K2_U09 K2_U10 K2_U12 K2_U13 K2_U16 K2_U17 K2_U18 K2_U19 K2_U20 K2_U21 K2_U22	C1	Lab1-Lab2	3 4 5 6
U6	K2_U01 K2_U08 K2_U10 K2_U12 K2_U13 K2_U16 K2_U17 K2_U18 K2_U19 K2_U20 K2_U21 K2_U22 K2_U23_S2BKM K2_U24_S2BKM	C1	Lab1-Lab2	3 4 5 6
K1	K2_K01 K2_K04 K2_K05 K2_K07 K2_K10 K2_K12 K2_K13 K2_K17_S2BKM	C1 C2	Wy1-Wy6 Lab1-Lab2	1 2 3 4 5 6
K2	K2_K03 K2_K07 K2_K09 K2_K10 K2_K11 K2_K12 K2_K13 K2_K17_S2BKM	C1 C2	Wy1-Wy6 Lab1-Lab2	1 2 3 4 5 6
K3	K2_K01 K2_K02 K2_K04 K2_K05 K2_K07 K2_K10 K2_K12 K2_K13 K2_K14 K2_K15 K2_K16 K2_K17_S2BKM	C1 C2	Wy1-Wy6 Lab1-Lab2	1 2 3 4 5 6
K4	K2_K01 K2_K03 K2_K04 K2_K10 K2_K11 K2_K13 K2_K14 K2_K15 K2_K16 K2_K17_S2BKM	C1 C2	Wy1-Wy6 Lab1-Lab2	1 2 3 4 5 6