Zał. nr 5 do ZW 16/2020

Faculty of Information and Communication Technology/Department of Fundamentals of Computer Science

COURSE CARD

Name of the course in polish	:	**Systemy Identyfikacyjne i Biometryczne**
Name of the course in english	:	**Identification and Biometric Systems**
Field of study	:	Algoritmic Computer Science
Specialty (if applicable)	:	
Level and form of studies	:	II degree, stationary
Type of course	:	optional
Course code	:	W04INA-SM4109G
Group of courses	:	Yes

	Lectures	Exercides	Laboratory	Project	Seminar
Number of classes held in schools (ZZU)	30	30			
The total number of hours of student workload (CNPS)	60	120			
Assesment	pass				
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)	2	2			

PREREQUISITES FOR KNOWLEDGE, SKILLS AND OTHER POWERS

Knowledge of information systems design principles. Basic skills in probability calculus and statistics.

COURSE OBJECTIVES

C1 Learning about biometric methods, construction of biometric-based identification systems, and demonstration of identification techniques using modern identity documents

C2 Getting skills and knowledge in designing identification systems based on biometrics and modern identity documents

COURSE LEARNING OUTCOMES

The scope of the student's knowledge:

W1 Knows technical details related to electronic identity cards

W2 Knows technical details related to biometric identification

W3 Understands mechanisms of errors in biometric identification procedures

W4 Knows how to protect personal data

W5 Knows the modern techniques of monitoring and anomaly detection by sensor systems

The student skills:

U1 Is able to design and implement an application using electronic ID cards

U2 Is able to design and implement an application using biometric readers

U3 Is able to analyse the risk of personal data leakage

U4 Is able to design a system storing and proceeding confidential data

U5 Is able to conduct analysis for the particular biometric identification system scenario, propose appropriate solution and tweak system parameters

The student's social competence:

K1 Is able to design/modify a solution to make it well suited to the economical/cultural environment

K2 Follows the rules of personal and biometric data protection

K3 Is able to train users of identification systems

COURSE CONTENT

Type of classes - lectures		
Wy1	Introduction to biometric, fundamental properties and application	4h
Wy2	Errors of biometric systems (FAR and FRR, ROC and DET curve, CMC)	2h
Wy3	Testing, selection and comparison of biometric systems	2h
Wy4	Overview of biometric systems	8h
Wy5	Protection of biometric data	2h
Wy6	Physical monitoring based on identification systems	2h
Wy7	Reliability issues for biometric systems	2h
Wy8	Security of sensors and biometric system	2h
Wy9	Electronic identification documents	4h
Wy10	Legal and ethical aspects of biometrics	2h
	Sum of hours	30h

Type of classes - exercises		
Ćw1	Protocol analysis of protocols for electronic identification documents	4h
Ćw2	Design of applications based on electronic identity documents	2h
Ćw3	Analysis of biometrics	4h
Ćw4	Design of solutions based on biometric methods	4h
Ćw5	Management of sensitive information	4h
Ćw6	Analysis of solutions implementing cancelable biometrics	4h
Ćw7	Analysis of solutions for liveness testing and presentation attacks detection	4h
Ćw8	Analysis of solutions based on biometric fusion	4h
	Sum of hours	30h

Applied learning tools

1. Traditional lecture
2. Multimedia lecture
3. Solving tasks and problems
4. Solving programming tasks
5. Creating programming projects
6. Creating multimedia presentations by students
7. Consultation
8. 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-K3	final test
F2	U1-U5, K1-K3	short tests, tasks assignments
P=50%*F1+50%*F2		

BASIC AND ADDITIONAL READING

1. BSI TR-03110 Advanced Security Mechanisms for Machine Readable Travel Documents
2. Bindings:Guide to Biometrics. Ruud M. Bolle, Jonathan H. Connell, Sharath Pankanti, Nalini K. Ratha, Andrew W. Senior, ISBN: 1441923055
3. Anil Jain, Patrick Flynn, Arun A. Ross, “Handbook of Biometrics”, Springer-Verlag US, 2008

SUPERVISOR OF COURSE

dr inż. Wojciech Wodo

MATRIX OF LEARNING OUTCOMES FOR THE SUBJECT
Systemy Identyfikacyjne i Biometryczne
WITH LEARNING OUTCOMES IN THE FIELD OF ALGORITHMIC COMPUTER SCIENCE

Subject learning effect	Relating the subject effect to the learning outcomes defined for the field of study	Objectives of the course**	Program content**	Teaching tool number**
W1	K2_W01 K2_W02 K2_W04 K2_W05 K2_W06 K2_W07 K2_W08 K2_W09	C1	Wy1-Wy10	1 2 7 8
W2	K2_W01 K2_W02 K2_W04 K2_W05 K2_W06 K2_W07 K2_W08 K2_W09	C1	Wy1-Wy10	1 2 7 8
W3	K2_W01 K2_W02 K2_W04 K2_W05 K2_W06 K2_W08 K2_W09	C1	Wy1-Wy10	1 2 7 8
W4	K2_W01 K2_W02 K2_W04 K2_W05 K2_W07 K2_W08 K2_W09	C1	Wy1-Wy10	1 2 7 8
W5	K2_W01 K2_W02 K2_W04 K2_W05 K2_W06 K2_W07 K2_W08 K2_W09	C1	Wy1-Wy10	1 2 7 8
U1	K2_U01 K2_U02 K2_U03 K2_U05 K2_U06 K2_U08 K2_U09 K2_U10 K2_U12	C2	Ćw1-Ćw8	3 4 5 6 7 8
U2	K2_U01 K2_U02 K2_U03 K2_U05 K2_U06 K2_U08 K2_U09 K2_U10 K2_U12	C2	Ćw1-Ćw8	3 4 5 6 7 8
U3	K2_U01 K2_U02 K2_U03 K2_U04 K2_U05 K2_U06 K2_U08 K2_U10 K2_U12	C2	Ćw1-Ćw8	3 4 5 6 7 8
U4	K2_U03 K2_U05 K2_U06 K2_U09 K2_U10 K2_U12 K2_U13	C2	Ćw1-Ćw8	3 4 5 6 7 8
U5	K2_U01 K2_U02 K2_U03 K2_U04 K2_U05 K2_U06 K2_U07 K2_U08 K2_U09 K2_U10 K2_U11 K2_U12 K2_U13	C2	Ćw1-Ćw8	3 4 5 6 7 8
K1	K2_K03 K2_K05 K2_K06 K2_K07 K2_K09 K2_K11 K2_K12	C1 C2	Wy1-Wy10 Ćw1-Ćw8	1 2 3 4 5 6 7 8
K2	K2_K05 K2_K07 K2_K08 K2_K09 K2_K11 K2_K12	C1 C2	Wy1-Wy10 Ćw1-Ćw8	1 2 3 4 5 6 7 8
K3	K2_K03 K2_K05 K2_K06 K2_K07 K2_K09 K2_K11 K2_K12	C1 C2	Wy1-Wy10 Ćw1-Ćw8	1 2 3 4 5 6 7 8