

Faculty of Information and Communication Technology/Department of Fundamentals of Computer Science					
COURSE CARD					
Name of the course in polish	:	<b>Technologie zwiększające prywatność</b>			
Name of the course in english	:	<b>Privacy Enhancing Technologies</b>			
Field of study	:	Algorithmic Computer Science			
Specialty (if applicable)	:				
Level and form of studies	:	II degree, stationary			
Type of course	:	optional			
Course code	:	W04INA-SM4120G			
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			
<b>PREREQUISITES FOR KNOWLEDGE, SKILLS AND OTHER POWERS</b>					
knowledge of GDPR rules, knowledge and skills in cryptography					
<b>COURSE OBJECTIVES</b>					
<b>C1</b> acquiring knowledge and skills in the field of privacy protection technologies					
<b>C2</b> gaining practical skills in the design and implementation of privacy protection					

**COURSE LEARNING OUTCOMES**

The scope of the student's knowledge:

**W1** knows the mechanisms and limitations of anonymous communication

**W2** knows the mechanisms of pseudonymization and anonymization

**W3** knows the fundamental systems implementing privacy protection

The student skills:

**U1** can evaluate the effectiveness of privacy protection mechanisms

**U2** is able to design / choose a solution adequate to the needs

**U3** has experience related to possibilities of breaking privacy protection

The student's social competence:

**K1** understanding and skills to consider requirements for privacy protection

**K2** can estimate the risk and the level of reliability of privacy protection systems

**COURSE CONTENT**

Type of classes - lectures

Wy1	anonymity measures and database protection	4h
Wy2	simulatability, deniability and other basic cryptographic mechanisms	2h
Wy3	pseudonimization techniques	2h
Wy4	pseudonymous signatures	4h
Wy5	authentication and key exchange protocols supporting privacy protection	4h
Wy6	protocols of anonymous communication	4h
Wy7	anonymous transactions and cryptocurrencies	4h
Wy8	malicious cryptography and methods for breaking privacy protection	2h
Wy9	e-voting	4h
	Sum of hours	30h

Type of classes - exercises

Ćw1	activities sceanario due to GDPR	4h
Ćw2	differential privacy, database protection	2h
Ćw3	privacy protection in case of standard protocols	6h
Ćw4	pseudonimization and anonymization techniques	2h
Ćw5	privacy protection in ICAO standards	4h
Ćw6	TOR	2h
Ćw7	Monero protocols	2h
Ćw8	implementation of hostile cryptography for privacy breaches	4h
Ćw9	pragmatic e-voting systems	4h
	Sum of hours	30h

Applied learning tools		
<ol style="list-style-type: none"> <li>1. Multimedia lecture</li> <li>2. Solving tasks and problems</li> <li>3. Solving programming tasks</li> <li>4. Creating programming projects</li> <li>5. Self-study students</li> </ol>		
EVALUATION OF THE EFFECTS OF EDUCATION ACHIEVEMENTS		
Value	Number of training effect	Way to evaluate the effect of education
F1	W1-W3, K1-K2	tests
F2	U1-U3, K1-K2	problem solving, programming assignments
P=50%*F1+50%*F2		
BASIC AND ADDITIONAL READING		
<ol style="list-style-type: none"> <li>1. The literature will be given at the beginning of the class by the lecturer</li> </ol>		
SUPERVISOR OF COURSE		
prof. Mirosław Kutylowski		

MATRIX OF LEARNING OUTCOMES FOR THE SUBJECT

Technologie zwiększające prywatność

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_W03 K2_W04 K2_W05 K2_W07 K2_W08 K2_W09 K2_W10	C1	Wy1-Wy9	1 5
W2	K2_W01 K2_W02 K2_W03 K2_W04 K2_W05 K2_W07 K2_W08 K2_W09 K2_W10	C1	Wy1-Wy9	1 5
W3	K2_W01 K2_W02 K2_W03 K2_W04 K2_W05 K2_W07 K2_W08 K2_W09 K2_W10	C1	Wy1-Wy9	1 5
U1	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-Ćw9	2 3 4 5
U2	K2_U01 K2_U02 K2_U03 K2_U04 K2_U05 K2_U06 K2_U07 K2_U10 K2_U11 K2_U12 K2_U13	C2	Ćw1-Ćw9	2 3 4 5
U3	K2_U01 K2_U02 K2_U03 K2_U04 K2_U05 K2_U06 K2_U07 K2_U10 K2_U11 K2_U12 K2_U13	C2	Ćw1-Ćw9	2 3 4 5
K1	K2_K01 K2_K02 K2_K03 K2_K04 K2_K05 K2_K09 K2_K10 K2_K11 K2_K12	C1 C2	Wy1-Wy9 Ćw1-Ćw9	1 2 3 4 5
K2	K2_K01 K2_K02 K2_K03 K2_K04 K2_K05 K2_K06 K2_K07 K2_K08 K2_K09 K2_K10 K2_K11 K2_K12	C1 C2	Wy1-Wy9 Ćw1-Ćw9	1 2 3 4 5