

FACULTY OF COMPUTER SCIENCE AND MANAGEMENT

SUBJECT CARD**Name in Polish:** Bezpieczeństwo systemów informatycznych**Name in English:** Computer Security**Main field of study (if applicable):** Computer Science**Specialization (if applicable):****Level and form of studies:** 1st/ ~~2nd~~* level, full-time / ~~part-time~~***Kind of subject:** obligatory / ~~optional~~ / ~~university-wide~~***Subject code** INZ0278Wcl**Group of courses** YES / ~~NO~~*

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)	30	15	15		
Number of hours of total student workload (CNPS)	60	30	30		
Form of crediting	Examination / crediting with grade*	Examination / crediting with grade*	Examination / crediting with grade*	Examination / crediting with grade*	Examination / crediting with grade*
For group of courses mark (X) final course	X				
Number of ECTS points	2	1	1		
including number of ECTS points for practical (P) classes	0	0	2		
including number of ECTS points for direct teacher-student contact (BK) classes	1,2	0,6	0,6		

*delete as applicable

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Operating systems
2. Computer networks
3. Computer architecture

SUBJECT OBJECTIVES

- C1 Identify and analyze basic security problems of computer systems
- C2 Demonstrate knowledge of the use, care, and maintenance of security related tools
- C3 Demonstrate the ability to communicate effectively in solving common IT security problems

SUBJECT EDUCATIONAL EFFECTS

relating to knowledge:

PEK_W01 Student has a knowledge about computer security threats

PEK_W02 Student has a knowledge about basic security countermeasures

relating to skills:

PEK_U01 Student can identify the common security problems

PEK_U02 Student can select and use some security countermeasures

relating to social competences:

PEK_K01 Student understands the important societal implications of computer security

PEK_K02 Student can cooperate to get the security related information and to improve security level of the computer system

PROGRAMME CONTENT

Form of classes - lecture		Number of hours
Lec 1	Introduction to Computer Security	2
Lec 2	Security Models	2
Lec 3	Information Flow	2
Lec 4	Access Control	2
Lec 5	Symetric-Key Encryption	2
Lec 6	Message Integrity	2
Lec 7	Public Key Kryptography	2
Lec 8	Authentication and Key Exchange Protocols	2
Lec 9	System Security	2
Lec 10	Application Security	2
Lec 11	Web Security	2
Lec 12	Application Security	2
Lec 13	The Trusted Computing Architecture	2
Lec 14	Security Policy	2
Lec 15	Rules and Regulations for Cyber Security	2
	Total hours	30
Form of classes – class		Number of hours
Cl 1	Modeling and Analyzing Computer Security	1
Cl 2	Access Control Matrix	2
Cl 3	Take-Grant Model	2
Cl 4	Protection Models	2
Cl 5	Confidentiality/Integrity Policy	2
Cl 6	Bell LaPadula Model, Biba Integrity Model	2
Cl 7	Information Flow, Authentication/Integrity, Cryptography	2
Cl 8	System Design and Validation, Audit, and Malware	2
	Total hours	15
Form of classes - laboratory		Number of hours

Lab 1	Basic Security Tools	1
Lab 2	Windows Security	2
Lab 3	Linux Security	2
Lab 4	Information Gathering	2
Lab 5	Operating System-based Vulnerability Assessment	2
Lab 6	Penetration Testing	2
Lab 7	Working with Exploits	2
Lab 8	Social Engineer Toolkit	2
	Total hours	15

Form of classes - project		Number of hours
Proj 1		
Proj 2		
Proj 3		
Proj 4		
...		
	Total hours	

Form of classes - seminar		Number of hours
Sem 1		
Sem 2		
Sem 3		
...		
	Total hours	

TEACHING TOOLS USED	
N1. Lecture N2. Students' own work. N3. Lab exercises N4. Classes assignments N5. Individual consultations with teacher	

EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

Evaluation (F – forming (during semester), P – concluding (at semester end))	Educational effect number	Way of evaluating educational effect achievement
F1	PEK_W01- PEK_W02, PEK_U01- PEK_U03, PEK_K01- PEK_K02,	Lab reports and Classes exercises
P PEK_W01- PEK_W02, Final Exam		

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

- [1] M.Bishop, Introduction to Computer Security, Addison Wesley Professional; 2005
- [2] R.Anderson, Secuiryt Engineering, Wiley, 2008
- [3] W.Stallings, Computer Security: Principles and Practice, 2011

SECONDARY LITERATURE:

- [1] B.Shneier, Applied Cryptography: Protocols, Algorithms, and Source Code in C,1996
- [2] A.Singh, Metasploit PenetrationTesting Cookbook, Pack Publishing, 2012
- [3] A.Menezes, Handbook of Applied Cryptography (Discrete Mathematics and Its Applications), 1996

SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

Grzegorz Kołaczek, Grzegorz.Kolaczek@pwr.wroc.pl

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR
SUBJECT
Computer Security
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY
Computer Science
AND SPECIALIZATION

Subject educational effect	Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)**	Subject objectives***	Programme content***	Teaching tool number***
PEK_W01 (knowledge)	K1INF_W13	C1	Lec2-Lec15	N1,N4
PEK_W02	K1INF_W13	C1	Lec1,Lec15	N1,N4
PEK_U01 (skills)	K1INF_U09	C2	Lec1-Lec15 Lab2,Lab4,Lab5,Lab7,Lab8 C11-C18	N2-N5
PEK_U02	K1INF_U03, K1INF_U09	C2,C3	Lec1-Lec15 Lab2 ,Lab4,Lab7,Lab8 C11-C18	N2-N5
PEK_K01 (competences)	K1INF_U09, K1INF_U14	C2,C3	Lec1-Lec15 Lab3,Lab5 C13-C16	N2-N5
PEK_K02	K1INF_U09	C1,C3	Lec1,Lab1-Lab8 C11-C13	N2,N4-N5
	K1INF_W13	C1,C2,C3	Lab1-Lab8 C14-C18	N2, N4-N5

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above