COURSE DESCRIPTION CARD

Faculty of Electrical Engineering		

Field of study	Electrical and Electronics Engineering	Degree level and programme type	bachelor's degree
Specialization/ diploma path	-	**Study profile**	-

Course name	**Security and Reliability of Network Systems**	**Course code**	**IS-FEE-10035S**
		Course type	**elective**

Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	Semester	summer
	30				15			No. of ECTS credits	4

Entry requirements	-

Course objectives	Acquiring knowledge of methods and techniques used to provide secure access, transmission and storage of information.

Course content	Fundamentals of cryptography. Conditions of providing data confidentiality and integrity. Symmetric and asymmetric cipher algorithms e.g. DES, RSA. Hash functions. Digital signatures. Idea of Public Key Infrastructure (PKI). Sources and types of security threats to network systems. Security threats to host and server applications. Security threats to web applications. Methods of protection against selected kinds of threats. Firewall systems, antivirus protection, intrusion detection systems (IDS), idea of honeypots. Methods of authentication and authorization in network systems. Conception of security politics. Examples of complex security politics. Security audit and penetration tests. Systems for data backuping and restoring. Array of disks (RAID). Network storage systems: Storage Area Network (SAN), Network Area Storage (NAS).

Teaching methods	lecture, specialization workshop.

Assessment method	**lecture: tests;** **specialization workshop: evaluating the student's performance in classes, presentation on given subject.**

Symbol of learning outcome	Learning outcomes	Reference to the learning outcomes for the field of study
LO1	explains features, types, and applications of encryption algorithms and hash functions and distinguishing their functionalities;	
LO2	describes technologies used for providing secure users and devices authentication in network systems;	
LO3	characterizes methods of providing information confidentiality and integrity;	
LO4	depicts technologies used in information systems to provide secure and reliable data storage;	
LO5	identifies and characterizes sources and types of threats to network systems	
LO6	setts up simple networks, configuring network settings in PC workstations and in choosing the proper means that can be used to protect data systems against the particular threats and explains their features;	

Symbol of learning outcome	Methods of assessing the learning outcomes	Type of tuition during which the outcome is assessed
LO7	prepares multimedia presentation on given subject connected with module content.	
LO1	tests on lecture content, evaluating the student's performance in classes	**L, SW**
LO2	tests on lecture content, evaluating the student's performance in classes	**L, SW**
LO3	tests on lecture content, evaluating the student's performance in classes	**L, SW**
LO4	tests on lecture content	**L**
LO5	tests on lecture content	**L**
LO6	tests on lecture content	**L**
LO7	evaluating the student's presentations	**SW**

Student workload (in hours)		No. of hours
Calculation	**attending the class sessions**	**45**
	preparation for specialization worshop	**15**
	work on presentations	**20**
	preparation for and participation in exams/tests	**20**
	TOTAL:	**100**

Quantitative indicators	HOURS	No. of ECTS credits
Student workload – activities that require direct teacher participation	45	1,5
Student workload – practical activities	50	2

Basic references	**1. Stallings W.: Cryptography and network security: principles and practice. Prentice Hall, 2010.** **2. Anderson R. J.: Security engineering: a guide to building dependable distributed systems. Wiley, 2008.** **3. Cole E., Krutz R. L., Conley J.: Network security bible. J. Wiley & Sons, 2005**
Supplementary references	**1. Chestwick W. R., Bellovin S. M., Rubin A. D.: Firewalls and internet security. Addison Wesley, 2003.** **2. Pipkin D. L.: Information security: protecting the global enterprise. Prentice Hall PTR, 2000.**
Organisational unit conducting the course	**Department of Photonics, Electronics and Lighting Technology**	**Date of issuing the programme**
Author of the programme	**Andrzej Zankiewicz, Ph.D. Eng.**	**26.01.2020**

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