

### 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	<b>lecture: tests;</b> <b>specialization workshop: evaluating the student's performance in classes, presentation on given subject.</b>								
Symbol of learning outcome	Learning outcomes							Reference to the learning outcomes for the field of study	
L01	explains features, types, and applications of encryption algorithms and hash functions and distinguishing their functionalities;								
L02	describes technologies used for providing secure users and devices authentication in network systems;								
L03	characterizes methods of providing information confidentiality and integrity;								
L04	depicts technologies used in information systems to provide secure and reliable data storage;								
L05	identifies and characterizes sources and types of threats to network systems								
L06	sets 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;								

L07	prepares multimedia presentation on given subject connected with module content.	
<b>Symbol of learning outcome</b>	<b>Methods of assessing the learning outcomes</b>	<b>Type of tuition during which the outcome is assessed</b>
L01	tests on lecture content, evaluating the student's performance in classes	L, SW
L02	tests on lecture content, evaluating the student's performance in classes	L, SW
L03	tests on lecture content, evaluating the student's performance in classes	L, SW
L04	tests on lecture content	L
L05	tests on lecture content	L
L06	tests on lecture content	L
L07	evaluating the student's presentations	SW
<b>Student workload (in hours)</b>		<b>No. of hours</b>
<b>Calculation</b>	attending the class sessions	45
	preparation for specialization workshop	15
	work on presentations	20
	preparation for and participation in exams/tests	20
	<b>TOTAL:</b>	<b>100</b>
<b>Quantitative indicators</b>		<b>HOURS</b> <b>No. of ECTS credits</b>
<b>Student workload – activities that require direct teacher participation</b>		45    1,5
<b>Student workload – practical activities</b>		50    2
<b>Basic references</b>	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	
<b>Supplementary references</b>	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.	
<b>Organisational unit conducting the course</b>	<b>Department of Photonics, Electronics and Lighting Technology</b>	<b>Date of issuing the programme</b>
<b>Author of the programme</b>	<b>Andrzej Zankiewicz, Ph.D. Eng.</b>	<b>26.01.2020</b>

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