



## Subject card

Subject name and code	Introduction to cybersecurity, PG_00053947						
Field of study	Informatics						
Date of commencement of studies	October 2024	Academic year of realisation of subject			2025/2026		
Education level	first-cycle studies	Subject group			Obligatory subject group in the field of study Subject group related to scientific research in the field of study		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	2	Language of instruction			Polish		
Semester of study	4	ECTS credits			2.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Department of Computer Communications -> Faculty of Electronics, Telecommunications and Informatics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Wojciech Gumiński					
	Teachers	dr inż. Wojciech Gumiński					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	0.0	15.0	0.0	30
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	30		2.0		18.0	50
Subject objectives	The aim of the course is learning cybersecurity basics. During classes students get to know selected security threats. A set of security functions is also presented: confidentiality, integrity and availability along with measures for achieving them. During project classes students practice cryptomaterial operations applied to basic, popular use cases.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W44] knows and understands, to an advanced extent, architecture, design principles and methods of hardware and software support for local and distributed information systems, including computing systems, databases, computer networks and information applications, as well as the principles of human-computer interaction, the operation and evaluation criteria of data processing, storage and transfer methods, including computational algorithms, artificial intelligence and data mining as well as standards and methods of IT systems administration, monitoring of processes and robustness to undesirable phenomena and activities	Student lists and describes security attributes. Student lists the differences between symmetric and asymmetric cryptography algorithms and can provide examples of their applications.	[SW1] Assessment of factual knowledge
	[K6_K03] is ready to meet social obligations, co-organise activities for the social environment, initiate actions for the public interest, think and act in an entrepreneurial way	Student is able to implement cryptographic information security.	[SK1] Assessment of group work skills [SK5] Assessment of ability to solve problems that arise in practice
	[K6_U03] can design, according to required specifications, and make a simple device, facility, system or carry out a process, specific to the field of study, using suitable methods, techniques, tools and materials, following engineering standards and norms, applying technologies specific to the field of study and experience gained in the professional engineering environment	Student is able to apply presented security metrics. During project classes integrates/implements and presents their application in selected use case.	[SU5] Assessment of ability to present the results of task [SU1] Assessment of task fulfilment
Subject contents	Basic terms related to IT systems security, security functions: integrity, confidentiality, authentication. Classification of threats and attacks: information sniffing, modification, spoofing, targeted and non-targeted attacks, malware, botnets. Cryptography basics: symmetric and asymmetric cryptography, one time keys, block ciphers, stream ciphers, data integrity. Public key cryptography and PKI. Security in applications: PKI applications, operations of certificate-based solutions. Security management basics: security policy, security best practices, secure programming best practices.		
Prerequisites and co-requisites	The ability to configure and operate popular operating systems		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project	50.0%	50.0%
	Lecture	50.0%	50.0%
Recommended reading	Basic literature	Lecture materials	
	Supplementary literature	Schneier B.: Kryptografia dla praktyków  Bilski T., Pankowski T., Stokłosa J.: Bezpieczeństwo danych w systemach informatycznych  Stallings W.: Cryptography and Network Security  Gollmann D.: Computer security	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> <li>1. Deployment of selected cryptographic algorithms using popular frameworks</li> <li>2. Application of PKI to mutual web server-client authentication</li> <li>3. Application of PKI to e-mail signing and encryption</li> </ol>		
Work placement	Not applicable		

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