

Subject card

Subject name and code	Web protocols, PG_00143993						
Field of study	Informatics						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2026/2027		
Education level	Bachelor's studies		Subject group		Obligatory subject group in the field of study Subject group related to practical vocational preparation		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	2		Language of instruction		Polish		
Semester of study	3		ECTS credits		4.0		
Learning profile	practical		Assessment form		credit		
Conducting unit	Institute of Informatics -> Faculty of Mathematics, Physics and Informatics -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Jakub Neumann				
	Teachers						
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	15.0	0.0	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		0.0		45.0	75
Subject objectives	The aim of the course is to familiarize students with selected protocols used in the implementation of computer systems, mainly web applications.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[INFL3_U06] can take care of data security, including secure transmission; uses data compression and encryption tools		understands the problem of sending data in clear text, is able to apply appropriate techniques ensuring, among others, data confidentiality and integrity, public key cryptography and symmetric encryption. Knows TLS and SSH protocols, can use public key infrastructure and generate TLS certificates		[SU2] presentation/project/paper/report [SU4] test/exam - oral or written		
	[INFL3_U05] uses advanced functionalities of operating systems, in particular related to network aspects, virtualization, containerization and other cloud technologies		in the implementation of IT systems, it uses functionalities related to the operation of network interfaces by the operating system		[SU2] presentation/project/paper/report [SU4] test/exam - oral or written		
	[INFL3_W07] has knowledge of designing, developing, testing, implementing and maintaining web applications and their security		can design, test and develop web applications using HTTP REST and Pub/Sub MQTT patterns and ensure data confidentiality and integration and server authentication using the TLS protocol		[SW4] test/exam - oral or written [SW2] presentation/project/paper/report		
	[INFL3_W06] has knowledge of operating systems, network technologies including basic web communication protocols		has knowledge of the technology stack used in communication protocols, with particular emphasis on the HTTP ant MQTT protocols		[SW4] test/exam - oral or written [SW2] presentation/project/paper/report		

Subject contents	• network interfaces and their support in the operating system • OSI model • asymmetric and symmetric encryption, public key infrastructure • use of advanced SSH functionalities, tunneling • HTTP protocol and REST pattern • MQTT protocol and Pub/Sub pattern • securing communication, TLS protocol, generating and obtaining certificate		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	pass	51.0%	5.0%
	project	51.0%	95.0%
Recommended reading	Basic literature	Learning HTTP/2. A Practical Guide for Beginners, aut. Stephen Ludin, Javier Garza, ISBN 9781491962602	
	Supplementary literature	TCP/IP w 24 godziny, aut. Joe Casad, ISBN 9788328337084	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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