University of Gdańsk

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	mgr Łukasz Mielewczyk	
	Teachers	mgr Łukasz Mielewczyk	

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_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_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_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
[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

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<tr><td>Subject contents</td><td>

- 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

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<tr><td>Prerequisites and co-requisites</td><td></td></tr>
<tr><td>Assessment methods and criteria</td><td>
<table>
<tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr>
<tr><td>pass</td><td>51.0%</td><td>20.0%</td></tr>
<tr><td>project</td><td>51.0%</td><td>80.0%</td></tr>
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</td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>Learning HTTP/2. A Practical Guide for Beginners, aut. Stephen Ludin, Javier Garza, ISBN 9781491962602</td></tr>
<tr><td>Supplementary literature</td><td>TCP/IP w 24 godziny, aut. Joe Casad, ISBN 9788328337084</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td></td></tr>
<tr><td>Work placement</td><td>Not applicable</td></tr>
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