

Subject card

Subject name and code	Safety od Web applications, PG_00155306						
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	4		ECTS credits			2.0	
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		20.0	50
Subject objectives	The aim of the course is to familiarize students with issues related to the security of web applications, including how to properly design applications in terms of security, the use of dedicated/specialized protocols and counteracting popular attacks. Particular emphasis is placed on OAuth2/OpenIDConnect protocols and the issue of secure API sharing						

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	can safely serve APIs following the rules of OAuth2 flows/grants, use appropriate libraries to support OAuth2, manage the Keycloak authorization server	[SU2] presentation/project/paper/report [SU4] test/exam - oral or written
	[INFL3_U03] is able to work in a team of IT specialists, including being able to manage his/her time, make commitments and meet deadlines, communicate using various techniques in the professional environment, including the use of dedicated tools	is able to keep commitments, including time deadline, resulting from the implementation of project tasks, cooperate in a group carrying out similar projects/tasks	[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	has knowledge related to web application security issues, counteracting popular attacks, in particular knows the rules related to flows/grants of the OAuth2/ OpenIDConnect protocols	[SW4] test/exam - oral or written [SW2] presentation/project/paper/report
	[INFL3_K02] can precisely formulate questions to deepen his/her own understanding of a given topic or to find missing elements of reasoning	can precisely formulate questions related to the security of web applications and OAuth2/ OpenIDConnect protocols, in particular use concepts such as Resource Server, Authorization Server, Resource Owner, Client, User Agent	[SK2] presentation/project/paper/report [SK4] test/exam - oral or written
Subject contents	• Authentication, authorization, IT system typical security issues • HTTP protocol security, the role of the TLS protocol, securing the shared HTTP API • HTTP Basic Authorization • protocols OAuth2, Authorization Code Flow/Grant, Client Credential Flow/Grant, OpenID Connect • configuration of authentication and authorization services on the example of the Auth0/Okta website • local authentication and authorization service based on the example of the Keycloak server		
Prerequisites and co-requisites	Passed course "Protokoły sieci web"		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
		51.0%	60.0%
		51.0%	40.0%
Recommended reading	Basic literature	Bezpieczeństwo nowoczesnych aplikacji internetowych. Przewodnik po zabezpieczeniach, aut. Andrew Hoffman, ISBN 9788328370050	
	Supplementary literature	Bezpieczeństwo aplikacji internetowych dla programistów. Rzeczywiste zagrożenia, praktyczna ochrona, aut.Malcolm McDonald, 9788328378032	
	eResources addresses		
Example issues/ example questions/ tasks being completed			
Work placement	Not applicable		

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