

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Compiler Design, PG_00047891								
Field of study	Informatics								
Date of commencement of studies	October 2024		Academic year of realisation of subject			2026/2027			
Education level	first-cycle studies		Subject group			Optional subject group 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	3		Language of instruction			Polish			
Semester of study	5		ECTS credits			2.0			
Learning profile	general academic profile		Assessment form			assessment			
Conducting unit	Department of Intelligent Interactive		Systems -> Faculty of Electronics, Te			elecommunications and Informatics			
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. inż. Jan Daciuk						
	Teachers dr hab. inż. Jan Daciuk								
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
of instruction	Number of study	15.0	0.0	0.0 15.0			0.0	30	
	E-learning hours inclu	E-learning hours included: 0.0							
Learning activity and number of study hours	Learning activity	Participation ir classes includ plan	n didactic ed in study	Participation in consultation hours		Self-study		SUM	
	Number of study hours	30		2.0		18.0		50	
Subject objectives	The aim of the subject is acquisition of skills writing translators, especially compilers, for high level programming languages, as well as understanding their functioning. On completion of the subject, the students should be able to write parsers for a wide range of source codes using scanner generators and parser generators.								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
	[K6_U03] can desigr required specification a simple device, faci carry out a process, field of study, using s methods, techniques materials, following e standards and norms technologies specific study and experience the professional eng environment	Can design and develop simple aprsers according to specification.			[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment				
	[K6_W03] knows and understands, to an advanced extent, the construction and operating principles of components and systems related to the field of study, including theories, methods and complex relationships between them and selected specific issues - appropriate for the curriculum		Knows definitions and taxonomy of grammars and formal automata. Can depict functioning of lexical analyzers, parsers, and semantic analyzers. Can explain compiler construction and the role of its components. Can show methods for code optimization. Uses regular expressions for developing scanners. Creates parsers for data and programs.			[SW1] Assessment of factual knowledge			
Subject contents	 Formal languages, grammars, Chomskys classification 2. Meta-languages, notion XBNF, automata 3. Translators kinds, models, structure 4. Regular grammars, regular expressions, finite automata 5. Lexical analysis 6. Scanners generators 7. Context-free grammars, deterministic automata 8. Syntactic analysis LR 9. Syntactic analysis LL 10. Parsers generators 11. Syntax-directed translation 12. Target environment, memory management 13. Semantic analysis, code generation and optimization 14. Translation and evaluation of logical-arithmetic expressions 15. Final exam 								
Prerequisites and co-requisites									

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade		
	Colloquium	51.0%	40.0%		
	Presence and activity	51.0%	10.0%		
	Project	51.0%	50.0%		
Recommended reading	Basic literature	1. Aho A.V., Hopcroft J.E. Ullman J.D, Projektowanie i analiza algorytmów komputerowych, Państwowe Wydawnictwo Naukowe, 1983 2. Aho A.V., Sethi R., Ullman J.D., Kompilatory. Reguły, metody i narzędzia, Wydawnictwa Naukowo-Techniczne, Warszawa, 2002 3. Szwoch M.: Języki formalne, automaty i translatory, PWNT, Gdańsk, 2008			
	Supplementary literature	1. Niklaus Wirth, Algorytmy + struktury danych = programy, WNT, Warszawa, 1980.			
	eResources addresses	Adresy na platformie eNauczanie:			
Example issues/ example questions/ tasks being completed	Scanners and parsers for subsets of selected programming languages, construction of automata from regular expressions.				
Work placement	Not applicable				

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