Discipline	Language Processors code: 40 7th semester – winter	
Specialty	Software and Internet Technologies	
ECTS credits: **6**	Form of assessment: Exam	
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Department	COMPUTER AND ENGINEERING	
Faculty	FACULTY OF COMPUTING AND AUTOMATION	

Learning objectives:

The discipline “Language Processors” studies the basic working principles of languages processors – compilers and interpreters. The methods for implementation of the translation stages (scanning, parsing, semantic analysis, code generation, optimization) are discussed. The importance of the programming languages for the development of computer architectures is explained.
In the laboratory exercises a compiler for a training programming language is developed. The compiler consists of the most important modules for a compiler – a scanner, a parser, a semantic analyser and a code generator.

CONTENTS:		
Training Area	Hours lectures	Hours laboratory exercises
Language processors. Introduction and classification. Main requirements. Structure. One-pass and multi-pass compilers	2	2
Basic compilation stages. Compilation analysis and synthesis	2	2
Formal definition of programming languages. Grammars. Classification of grammars. Backus-Naur form.	2	2
Lexical analysis. Scanning of the lexical analysis	2	4
Lexical analysis generation	2	
Top-down parsing. LL(1) grammars. Methods for avoiding left recursion	2	8
Bottom-up parsing. LR and SLR grammars	2	2
Parser generation	2	2
Management of runtime environment	2	
Semantic analysis	2	4
Internal representation of programs. Semantic actions	2	
Code generation. Reverse polish notation	2	4
Interpretation. Basic structure and functioning	2	
Methods for internal representation of programming languages	2	
Interpretation methods for high-level programming languages	2	
TOTAL: 60 h	**30**	**30**