



The Faculty of:	Faculty of Electrical and Computer Engineering
Field of study:	Computer Engineering
Speciality:	-
Study degree (BSc, MSc):	First circle part time studies (BSc)

COURSE UNIT DESCRIPTION

Course title:	Languages, automata and computations
Lecturer responsible for course: Lesław Gniewek, PhD.	
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Department : Department of Computer and Control Engineering	

Semester	Weekly load	Type of classes				Number of ECTS credits
		L Lectures	C Theoretical Classes	Lb Laboratory	P Project	
4	3	20	-	15	10	7

Course description
<p>Lecture:</p> <ol style="list-style-type: none"> 1. Introduction, basic notions of mathematical linguistics. 2. Context-free grammars. 3. Transformation context-free grammar. 4. Operations on context-free languages, the membership of word to context-free language. 5. Regular languages, deterministic grammars. 6. Context languages, hierarchy Chomsky. 7. Finite automata and their analysis, stack automata. 8. Computability, Turing machines, Universal programming language. 9. Imperative paradigm, object-oriented paradigm. 10. Programming in logic, functional programming.
<p>Classes:</p> <p>-</p>
<p>Laboratory:</p> <ul style="list-style-type: none"> • Programming in logic • Examples of imperative programming • Functional programming

Project:

- Context-free languages
- Transformation context-free grammar
- Finite automata and their analysis

Objectives of the course

Student should obtain basic knowledge about theoretical foundations of computer science and paradigms of programming.

Examination method

Lecture: Written solution of problems.

Laboratory: Written test and short questions before every lab.

Project: Discussion about written project.

Bibliography

1. Hopcroft J. E., Ullman J. D., „Wprowadzenie do teorii automatów, języków i obliczeń”, PWN, W-wa, 2003.
2. Kluska J., Gniewek L., „Materiały pomocnicze do przedmiotu Teoretyczne podstawy informatyki”, Oficyna Wyd. Politechniki Rzeszowskiej, 2004.
3. Van Roy P., Haridi S., „Programowanie. Koncepcje, techniki i modele”, Helion, 2005.
4. Kowalski S., Mostowski A. Wł., „Teoria automatów i lingwistyka matematyczna”, PWN, Warszawa, 1979.
5. Brookshear J.G., „Informatyka w ogólnym zarysie”, WNT, Warszawa, 2003.
6. Aho A.V., Sethi R., Ullman J.D., „Kompilatory. Reguły, metody i narzędzia”, WNT, Warszawa, 2002.
7. Birkhoff G., Bartee T. C., „Współczesna algebra stosowana”, PWN, Warszawa, 1983.

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Head of Department signature	
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