Faculty of Fundamental Problems of Technology

COURSE CARD

Name in polish	:	**Systemy VLSI**
Name in english	:	**VLSI Systems**
Field of study	:	Computer Science
Specialty (if applicable)	:	
Undergraduate degree and form of	:	masters, stationary
Type of course	:	optional
Course code	:	E2_W17
Group rate	:	Yes

	Lectures	Exercides	Laboratory	Project	Seminar
Number of classes held in schools (ZZU)	30	30			
The total number of hours of student workload (CNPS)	90	90			
Assesment	pass				
For a group of courses final course mark	X				
Number of ECTS credits	3	3			
including the number of points corresponding to the classes of practical (P)		3			
including the number of points corresponding occupations requiring direct contact (BK)	3	3			

PREREQUISITES FOR KNOWLEDGE, SKILLS AND OTHER POWERS

Algorithms and data structures

COURSE OBJECTIVES

C1 Konwledge of the basic algorithmic problems and techniques in VLSI design

C2 Deeper understanding of some selected problems

COURSE LEARNING OUTCOMES

The scope of the student's knowledge:

W1 Current technology, fabrication and limitations of physical impelmentation of digital cuircits.

W2 Methods of digital cuircuit implemetations on logical gates and transistors and the standard methodologies of VLSI design

W3 Knowledge of the algorithms used in distinct phases of VLSI design

The student skills:

U1 Ability to design simple digital cuircits

U2 Ability to use algotrithmic techniques in the phases of VLSI design.

The student's social competence:

K1 Understanding of the significance of the progress in the other research areas, such as physics and electronics, on the algorithmic aspects of VLSI design.

COURSE CONTENT		
Type of classes - lectures		
Wy1	Introduction to VLSI	4h
Wy2	Combinational and sequential digital logic	4h
Wy3	Layout styles of VLSI design	2h
Wy4	Circuit partitioning	4h
Wy5	Floorplaning	4h
Wy6	Placement	4h
Wy7	Routing	6h
Wy8	Layout generation	2h
Type of classes - exercises		
Ćw1	Digital cuircuits design	6h
Ćw2	Layout design	6h
Ćw3	Partitioning and placement	6h
Ćw4	Floorplanning	6h
Ćw5	Routing	6h

Applied learning tools

1. Multimedia lecture
2. Solving tasks and problems
3. Creating multimedia presentations by students
4. Self-study students

EVALUATION OF THE EFFECTS OF EDUCATION ACHIEVEMENTS

Value	Number of training effect	Way to evaluate the effect of education
F1	W1-W3, K1-K1	Final test
F2	U1-U2, K1-K1	Quality of student's presentations during the excesises.
P=70%*F1+30%*F2		

BASIC AND ADDITIONAL READING

1. Sadiq M Sait, Habib Youssef, VLSI PHYSICAL DESIGN AUTOMATION Theory and Practice, World Scientific
2. Sabih H. Gerez, Algorithms for VLSI Design Automation, John Wiley and Sons, Chichester.
3. Wayne Wolf, Modern VLSI Design: IP-Based Design (Prentice Hall Modern Semiconductor Design)
4. http://lsmwww.epfl.ch/Education/former/2002-2003/VLSIDesign/index.html
5. http://6004.csail.mit.edu/6.371/
6. http://scale.engin.brown.edu/classes/EN1600S08/
7. http://www3.hmc.edu/ harris/cmosvlsi/4e/index.html

SUPERVISOR OF COURSE
dr Marcin Kik

RELATIONSHIP MATRIX EFFECTS OF EDUCATION FOR THE COURSE
VLSI Systems
WITH EFFECTS OF EDUCATION ON THE DIRECTION OF COMPUTER SCIENCE

Course training effect	Reference to the effect of the learning outcomes defined for the field of study and specialization (if applicable)	Objectives of the course**	The contents of the course**	Number of teaching tools**
W1	K2_W01 K2_W05 K2_W06 K2_W07	C1	Wy1-Wy8	1 4
W2	K2_W01 K2_W04 K2_W05 K2_W07	C1	Wy1-Wy8	1 4
W3	K2_W01 K2_W02 K2_W03 K2_W04 K2_W05	C1	Wy1-Wy8	1 4
U1	K2_U01 K2_U02	C2	Ćw1-Ćw5	2 3 4
U2	K2_U01 K2_U02 K2_U03 K2_U04 K2_U10 K2_U14 K2_U15 K2_U21	C2	Ćw1-Ćw5	2 3 4
K1	K2_K01	C1 C2	Wy1-Wy8 Ćw1-Ćw5	1 2 3 4