Zał nr 4 do ZW

Faculty of Fundamental Problems of Technology

COURSE CARD

Name in polish	:	**Systemy P2P**
Name in english	:	**P2P Networks**
Field of study	:	Computer Science
Specialty (if applicable)	:	
Undergraduate degree and form of	:	masters, stationary
Type of course	:	optional
Course code	:	E2_W16
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)	60	120			
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

In this course both theoretical and practical knowledge is needed from the following lectures: algorithms and data structures, discrete mathematics, probability analysis.

COURSE OBJECTIVES

C1 Aquainting students with algorithmic aspects of Peer-to-Peer networks.

C2 Preparing students to designing algorithms for large and not controlled distributed systems.

COURSE LEARNING OUTCOMES

The scope of the student's knowledge:

W1 Knows basic Peer-to-Peer networks existing in practice and their theoretical foundations.

W2 Knows techniques applied in distributed hash tables and problems appearing therein.

W3 Knows methods of fast file transmission in large distributed systems.

The student skills:

U1 Is able to use mathematical knowledge in the analysis of algorithms.

U2 Is able to show inoptimal algorithmic solutions in distributed systems.

U3 Is able to apply randomized algorithms to solve problems in unreliable distributed environment.

The student's social competence:

K1 Understands the need to in-depth analyse a given algorithmic problem and the importance of this analysis in the context of a given distributed system.

COURSE CONTENT

Type of classes - lectures		
Wy1	Internet as a building foundation for Peer-to-Peer networks.	2h
Wy2	First Peer-to-Peer networks.	2h
Wy3	CAN: content addressable network.	2h
Wy4	Chord.	2h
Wy5	Pastry and Tapestry.	4h
Wy6	Degree optimization in a network.	4h
Wy7	Storage of ordered data.	4h
Wy8	Self-organizing networks.	2h
Wy9	Security.	2h
Wy10	Anonymity.	2h
Wy11	Fast file downloading.	2h
Wy12	Peer-to-Peer networks in practice.	2h
Type of classes - exercises		
Ćw1	Gnutella and BitTorrent.	2h
Ćw2	Load balancing in binary trees.	2h
Ćw3	Load balancing in the Chord network.	4h
Ćw4	Application of the model of throwing balls into bins.	2h
Ćw5	Pastry and Tapestry networks.	2h
Ćw6	Power of Two Choices.	2h
Ćw7	Distance halving and skip-graphs.	4h
Ćw8	Onion routing and network coding.	2h
Ćw9	Paircoding.	2h
Ćw10	Pareto distribution and game theory	2h
Ćw11	Generating random graphs.	4h
Ćw12	Networks of polynomial degrees.	2h

Applied learning tools
1. Multimedia lecture 2. Solving tasks and problems 3. Solving programming tasks 4. Creating programming projects 5. Consultation 6. 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	
F2	U1-U3, K1-K1	
P=50%*F1+50%*F2		

BASIC AND ADDITIONAL READING
1. 2. 3.

SUPERVISOR OF COURSE
prof. Jacek Cichoń

RELATIONSHIP MATRIX EFFECTS OF EDUCATION FOR THE COURSE
P2P Networks
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_W03_A K2_W04_A K2_W05	C1	Wy1-Wy12	1 5 6
W2	K2_W02 K2_W03_A K2_W04_A	C1	Wy1-Wy12	1 5 6
W3	K2_W01 K2_W02 K2_W03_A	C1	Wy1-Wy12	1 5 6
U1	K2_U01_A K2_U10 K2_U13	C2	Ćw1-Ćw12	2 3 4 5 6
U2	K2_U01_A K2_U15 K2_U19_A K2_U21_A	C2	Ćw1-Ćw12	2 3 4 5 6
U3	K2_U01_A K2_U09_A K2_U12_A K2_U13	C2	Ćw1-Ćw12	2 3 4 5 6
K1	K2_K12 K2_K13 K2_K14_A	C1 C2	Wy1-Wy12 Ćw1-Ćw12	1 2 3 4 5 6