FACULTY ……… / DEPARTMENT………………

SUBJECT CARD

Name in Polish …Zaawansowane techniki algorytmiczne…………….
Name in English …Advanced algorithmics…………………………….
Main field of study (if applicable): ………………………….
Specialization (if applicable): ……………………..
Level and form of studies: 3rd
Kind of subject: Interdisciplinary faculty course
Subject code …INP 9014………….
Group of courses ~~YES~~ **/ NO***

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)	30				
Number of hours of total student workload (CNPS)	90				
Form of crediting	Examination / crediting with grade*	Examination / crediting with grade*	Examination / crediting with grade*	Examination / crediting with grade*	Examination / crediting with grade*
For group of courses mark (X) final course					
Number of ECTS points	3				
including number of ECTS points for practical (P) classes					
including number of ECTS points for direct teacher-student contact (BK) classes					

*delete as applicable

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES
1. basic knowledge on algorithms and data structures corresponding to the 1st level of comuter science curriculum

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SUBJECT OBJECTIVES
C1 learning advanced algorithmic techniques
C2 getting skills in constructing and analysis of efficient algorithms

SUBJECT EDUCATIONAL EFFECTS
relating to knowledge:

PEK_W01 student knows computing models

PEK_W02 student knows advanced algorithic techniques

PEK_W03 student can analyze problem complexity

relating to skills:

PEK_U01 Student can apply algorithmic paradigms according to computing model

PEK_U02 Student can construct algorithms based on advanced paradigms

PEK_U03 Student can analyze algorithmic problems and algorithms based on known
      techniques

relating to social competences:

PEK_K01 understand the need for continuous training, knows and understands the need to
      learn independently and in groups

PROGRAMME CONTENT		
Form of classes - lecture		**Number of hours**
Lec 1	Computing models: distributed systems	2
Lec 2	Computing models: parallel computing	2
Lec 3	Computing models: Boolean circuits, OBDD	2
Lec 4	Quantum computing	2
Lec 5	Approximation algorithms	2
Lec 6	Algorithms for fuzzy data	2
Lec 7	Randomized algorithms	2
Lec 8	Derandomization	2
Lec 9	Online algorithms	2
Lec 10	Selfstabilization	2
Lec 11	Universal heuristics	2
Lec 12	Rapid mixing	2
Lec 13	Granice dolne	2
Lec 14	Communication complexity	2
Lec 15	Conclusions, open problems, new trends, discussion	2
	Total hours	30

Form of classes - class		Number of hours
Cl 1		
Cl 2		
Cl 3		
Cl 4		
..		
	Total hours	

Form of classes - laboratory		Number of hours
Lab 1		
Lab 2		

Lab 3		
Lab 4		
Lab 5		
…		
	Total hours	

Form of classes - project		Number of hours
Proj 1		
Proj 2		
Proj 3		
Proj 4		
…		
	Total hours	

Form of classes - seminar		Number of hours
Sem 1		
Sem 2		
Sem 3		
…		
	Total hours	

TEACHING TOOLS USED
N1. N2. N3.

EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

Evaluation (F – forming (during semester), P – concluding (at semester end)	Educational effect number	Way of evaluating educational effect achievement
P	W01-W03	exam
PRIMARY AND SECONDARY LITERATURE		

Research publications presenting the results being the subject of the course. Continuous updates of the examples used according to the state-of-the-art.

SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

Prof. dr hab. Mirosław Kutyłowski, miroslaw.kutylowski@pwr.edu.pl

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT

………………………

AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY

………………………..

AND SPECIALIZATION ……………………………..

Subject educational effect	Correlation between subject educational effect and educational effects defined for main field of study and specialization (if applicable)**	Subject objectives***	Programme content***	Teaching tool number***
PEK_W01 (wiedza)	I3_W02	C1,2	Wy1,2,3,7,11,12,13,14	N1,2,3
PEK_W02 (wiedza)	I3_W02	C1,2	Wy9,10	N1,2
PEK_W03(knowledge)	I3_W02	C1,2	Lec5-14	N1,2
PEK_U01 (skills)	I3_U02, I3_U09	C1,2	Lec4,5,6,11	N1,2
PEK_U02 **(skills)**	I3_U02, I3_U09	C1,2	Lec5-14	N1,2
PEK_U03 **(skills)**	I3_U02, I3_U09	C1,2	Lec3,4,6,11	N1,2
PEK_K01 (competences)	I3_K05	C1,2	Lec1-15	N1,2

** - enter symbols for main-field-of-study/specialization educational effects

*** - from table above