Zał. nr 4 do ZW 64/2012

FACULTY OF PURE AND APPLIED MATHEMATICS

SUBJECT CARD

Name in Polish WSTĘP DO ANALIZY DUŻYCH WOLUMENÓW DANYCH

Name in English INTRODUCTION TO BIG DATA ANALYTICS

Main field of study (if applicable): APPLIED MATHEMATICS

COMPUTATIONAL MATHEMATICS

Level and form of studies: ~~1st~~/ 2nd* level, full-time / ~~part-time*~~

Kind of subject: ~~obligatory~~ / optional ~~/ university-wide*~~

Subject code MAT001587

Group of courses YES ~~/ NO~~*

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)	30		30		
Number of hours of total student workload (CNPS)	90				
Form of crediting	crediting with grade				
For group of courses mark (X) final course	X				
Number of ECTS points	5				
including number of ECTS points for practical (P) classes			4		
including number of ECTS points for direct teacher-student contact (BK) classes	3				

*delete as applicable

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Student has basic programming skills.

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SUBJECT OBJECTIVES

C1 Searching, extracting, storing and computer-aided analysis of big data. Understanding its impact and relevance in today's society.

SUBJECT EDUCATIONAL EFFECTS

relating to knowledge:

PEK_W12 knows how to use programming languages and their scientific modules for big data analysis

relating to skills:

PEK_U12 can perform an analysis of big data by making use of a computer

relating to social competences:

PEK_K06 can, without assistance, search for necessary information in the literature, also in foreign languages

PEK_K02 can accurately formulate questions for deeper understanding of a given topic

PROGRAMME CONTENT

Form of classes - lecture		**Number of hours**
Lec 1	Introduction to Big Data	2
Lec 2	Big data platforms	2
Lec 3	Hadoop ecosystem	4
Lec 4	Querying big data with Hive	4
Lec 5	Big data and machine learning	4
Lec 6	In-memory big data platform - Spark	4
Lec 7	Linked Big Data	4
Lec 8	Big data visualization	2
Lec 9	Project presentations	4
	Total hours	**30**

Form of classes - project		**Number of hours**
Pr1	Practical Preparation and presentations of projects illustrating methods given in the lectures.	30
	Total hours	**30**

TEACHING TOOLS USED

N1. Lecture – traditional method and presentations
N2. Student partial project presentation and final presentation
N3. Consultations
N4. Student's self work – work related to the project development

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
F1	PEK_W12 PEK_U12	mid-term exams
F2	PEK_U12 PEK_K06 PEK_K02	Oral presentations
C P==0.5*F1+0.5*F2		

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

[1] Flach, Peter, Machine Learning, Cambridge University Press, 2012

[2] Holmes, Alex, Hadoop in practice, Manning Publications, 2013

[3] Provost, Foster, Facett, Tom, Data Science for Business. What you need to know about data mining and data-analytic thinking, O'Reilly, 2013

[4] Loshin, David, Big Data Analytics. From Strategic Planning to Enterprise Integration with Tools, Techniques, NoSQL, and Graph, Morgan Kaufmann, 2013

SECONDARY LITERATURE:

[5] http://hadoop.apache.org/, http://spark.apache.org/, http://storm.apache.org/, http://kafka.apache.org/

[6] deRoos, Dirk, Hadoop for Dummies, For Dummies, 2014

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

MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
INTRODUCTION TO BIG DATA ANALYTICS MAT001587
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY
APPLIED MATHEMATICS AND SPECIALIZATION
COMPUTATIONAL MATHEMATICS

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_W12	K2MIC_W12	C1	Lec1-Lec9	1,3
PEK_U12 (skills)	K2MIC_U21 K2MIC_U20 K2MIC_U24 K2MIC_U25	C1	Pr1	2,3,4
PEK_K02 **PEK_K06** **(competences)**	K2MIC_K02 K2MIC_K06	C1	Lec1-Le9, Pr1	1,2,3,4

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