

COMPUTER SCIENCE AND MANAGEMENT / DEPARTMENT OF OPERATIONS RESEARCH**SUBJECT CARD**

Name in Polish: Metody i narzędzia podejmowania decyzji
Name in English: Methods and Tools of Data Analysis
Main field of study (if applicable): Management
Specialization (if applicable): Business Management
Level and form of studies: 1st level, full-time
Kind of subject: obligatory
Subject code ZMZ2114
Group of courses NO

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)	15		15		
Number of hours of total student workload (CNPS)	30		60		
Form of crediting	Crediting with grade		Crediting with grade		
For group of courses mark (X) final course					
Number of ECTS points	1		2		
including number of ECTS points for practical (P) classes					
including number of ECTS points for direct teacher-student contact (BK) classes	0,5		0,5		

*delete as applicable

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Student has a basic knowledge of business management and decision making process. He has a general knowledge of information technics in management.
2. Student knows basic software for solving management problems, specially designed for decision making.
3. Student has a basic practical skills in working with Excel and SQL software.

SUBJECT OBJECTIVES

- C1. Acquisition of data mining knowledge in business management processes.
- C2. Getting skills in choosing and using decision support techniques in practical business problems solving.
- C3. Getting social skills in information and communication techniques for management.

SUBJECT EDUCATIONAL EFFECTS

relating to knowledge:

PEK_W01: Student has a basic knowledge in construction and using some quantitative methods and computer techniques in data mining useful in business information systems.

PEK_W02: Student has a basic knowledge in applying software in data mining.

relating to skills:

PEK_U01: Student can identify and propose ways of solving data mining problems.

PEK_U02: Student is able to build useful tools for data analysis for business decision processes.

relating to social competences:

PEK_K01: Student can enlarge his knowledge and abilities, can work in groups for solving management data mining problems.

PEK_K02: Student can find methods for solving decision problems, held accountable for his works, defend his views of the proposed way of solving problems.

PROGRAMME CONTENT

Form of classes – lecture		Number of hours
Lec 1	Tools and methods of decision support systems – introduction.	1
Lec 2	Decision making methods in business.	1
Lec 3	Multivariate analysis in decision making - examples of practical applications in business.	1
Lec 4	Multivariate analysis methods in decision making.	2
Lec 5	Relational databases OLTP.	2
Lec 6	Data warehouse.	2
Lec 7	OLAP in relational databases.	2
Lec 8	Decision tree – practical application in management	2
Lec 9	Written test.	2
	Total hours	15
Form of classes – class		Number of hours
Form of classes – laboratory		Number of hours
Lab 1	Get acquainted with data warehouse.	2
Lab 2	Star scheme and snowflake scheme in relational data warehouse.	1
Lab 3	Using OLAP in statistical sale analysis.	1
Lab 4	Using OLAP in solving sale management problems.	1
Lab 5	Using OLAP in multivariate client analysis.	2
Lab 6	Team work: preparing data for constructing regression tree of sale.	2
Lab 7	Team work: construction regression tree of sale. Results presentation.	2

Lab 8	Team work: sale analysis - construction association rules. Results presentation.	2
Lab 9	Test with computer.	2
	Total hours	15
Form of classes – project		Number of hours
Form of classes – seminar		Number of hours
TEACHING TOOLS USED		
N1. Informational- problematical lecture. N2. Multimedia presentation. N3. Laboratory instruction. N4. Briefing during laboratory classes. N5. Team discussion. N6. Internet didactic team discussion. N7. Data mining software. N8. Result report. N9. Computer test. N10. Written test.		

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_U01, PEK_U02	Computer test.
F2	PEK_U01, PEK_U02, PEK_K01, PEK_K02	Report of team work results.
P	PEK_W01	Written test.
F=2, P=1		

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

- [1] Todman Ch., Projektowanie hurtowni danych, Wyd. WN-T, 2003.
- [2] Januszewski A., Funkcjonalność informatycznych systemów zarządzania. Systemy business intelligence, Wyd. Nauk. PWN, Warszawa 2008
- [3] Larose D.T., Odkrywanie wiedzy z danych. Wprowadzenie do eksploracji danych. , Wyd. Nauk. PWN, Warszawa 2006
- [4] Poe V., Klauer P., Brobst S., Tworzenie hurtowni danych, WN-T, 2000
- [5] Surma J., Business intelligence , PWN, Warszawa, 2009
- [6] Knight G., Excel. Analiza danych biznesowych. Wyd. HELION, Gliwice, 2006.

SECONDARY LITERATURE:

- [1] Czermiński A., Czermiński J., Łatowska A., Teoria i praktyka podejmowania decyzji kierowniczych, Wyd. Tonik, Toruń, 2001.
- [2] Konarzewska-Gubała E., Programowanie przy wielorakości celów, Wyd. PWN, 1980.
- [3] Kwiatkowska A., Systemy wspomagania decyzji. Jak korzystać z wiedzy i informacji, Wyd. Nauk. PWN, Warszawa 2007.
- [4] Misztal M., Wykorzystanie drzew klasyfikacyjnych do wspomagania procesów podejmowania decyzji, Wyd. StatSoft, Kraków, 2000, ss. 31-42.
- [5] Radoński E., Systemy informatyczne w dynamicznej analizie decyzyjnej, Wyd. PWN, 2001.
- [6] Sej-Kolasa M., Zielińska A., Excel w statystyce, Wyd.. AE, Wrocław, 2004, ss. 112-141
- [7] Sobczyk M., Statystyka, Wyd. Nauk. PWN, Warszawa, 2007.
- [8] Twardowska K., Łodyga P., Modele zarządzania wspomagane Excelem, OW Politechniki Warszawskiej, 2003, ss. 19-32
- [9] Urban W., Siemieniako D., Lojalność klientów, PWN, Warszawa, 2008.

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

Leopold Szczurowski; e-mail: leopold.szczurowski@pwr.edu.pl

Anna Skowrońska-Szmer; e-mail: anna.skowronska-szmer@pwr.edu.pl