FACULTY **Computer Science and Management**

SUBJECT CARD

Name in Polish Analiza danych biznesowych
Name in English Business Data Analysis
Main field of study (if applicable): Management
Specialization (if applicable): Business Information System (BIS)
Level and form of studies: 2nd level, full-time
Kind of subject: obligatory
Subject code IEZ1205
Group of courses NO

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

*delete as applicable

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES
1. Basic knowledge of statistics

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SUBJECT OBJECTIVES
C1 Getting to know the methods and techniques of business data analysis
C2 Gaining knowledge of statistical packages with particular emphasis on R environment supporting analytical processes.
C3 The ability to select and apply the methods of data analysis specific to the defined research problem.
C4 The ability to present and visualize the results of model building process.

SUBJECT EDUCATIONAL EFFECTS
relating to knowledge:
PEK_W01 – The student has knowledge of the methods and techniques of business data analysis, knows its assumptions and conditions of applicability.
relating to skills:
PEK_U01 – he/she is capable of planning and implementing the scheme of data analysis referring to the real problems known from business's practice
PEK_U02 – he/she is capable of using statistical packages as a tool supported analysis
relating to social competences:
PEK_K01 – he/she is well-prepared to critically evaluation of the problem's solutions and his/her views and arguments can defend using scientific research methods.

PROGRAMME CONTENT		
Form of classes - lecture		Number of hours
Lec 1	From data to knowledge; types of business data, tools to support the process of data analysis and data visualization.	2
Lec 2	Introduction to R environment: methods and class data storage in R, the structure of objects, missing values, the basics of R, comparison of IBM SPSS package.	2
Lec 3	Basic methods of description and visualization of business data	2
Lec 4	Sales forecasting - introduction	2
Lec 5	Time series forecasting with exponential smoothing methods based on the state space approach.	2
Lec 6	Seasonal autoregressive integrated moving-average models with covariates	2
Lec 7	Functions and procedures that support the forecasting process in R	1
Lec 8	Test	1
Lec 9	Factor analysis – the basis and assumptions.	2
Lec 10	Products positioning map (factor analysis).	2
Lec 11	Modeling purchase decisions using multinomial logit models.	2
Lec 12	Examples of the use of logit models in business practice implemented in R package.	2
Lec 13	Discriminant analysis.	2
Lec 14	Conjoint analysis as an instrument of research preferences.	2
Lec 15	Market simulation and segmentation using conjoint analysis	2
Lec 16	Test	2
	Total hours	**30**
Form of classes - laboratory		Number of hours
Lab 1	Introduction to R: programming language basics, data acquisition, selecting variables and observations for analysis.	3
Lab 2	Presenting data (bar plots, histogram and kernel smooth, empirical distribution, dot charts, scatter plots etc.); basic data analysis using descriptive statistics.	2
Lab 3	Time series analysis and forecasting	2
Lab 4	Data reduction technique	2
Lab 5	Perceptual and preference positioning maps (discriminant analysis and factor analysis)	2
Lab 6	Discrete choice models with application to purchase decision	2
Lab 7	Conjoint analysis	2
	Total hours	**15**
TEACHING TOOLS USED		

N1. Presentation
N2. Videos
N3. Information lecture
N4. Case study
N5. Own work - preparation for laboratory

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_W01	Two written tests
F2	PEK_U01, PEK_U02	Oral answers, a written report
P=F1+F2		

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

[1] Mooi E., Sarstedt M. (2011) *A Concise Guide to Market Research The Process, Data, and Methods Using IBM SPSS Statistics,* Springer.
[2] Kung-Sik Ch., Cryer J.D. (2008) *Time Series Analysis with Applications in R*, Springer.
[3] Hyndman R.., Koehler A.B., Ord J.K., Snyder R.D. (2008), *Forecasting with Exponential Smoothing. The State Space Approach*, Springer.
[4] Muenchen R.A. (2011) *R for SAS and SPSS Users*, Springer.

SECONDARY LITERATURE:

[1] Chambers J.M. (2008) *Software for Data Analysis Programming with R*, Springer.
[2] Johnson R.A., Wichern D.W (2002), *Applied Multivariate Statistical Analysis*, Prentice Hall.

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

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MATRIX OF CORRELATION BETWEEN EDUCATIONAL EFFECTS FOR SUBJECT
Business Data analysis
AND EDUCATIONAL EFFECTS FOR MAIN FIELD OF STUDY **Management**
AND SPECIALIZATION **Business Information System (BIS)**

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	K2_ZARZ_W13 S2_BIS_W01	C1, C2	Lec1-Lec15	N1-N4
PEK_U01	K2_ZARZ_U14 S2_BIS_U01	C3, C4	Lab2, Lab4-Lab7	N2, N4, N5
PEK_U02	K2_ZARZ_U12 S2_BIS_U01	C3, C4	Lab1-Lab7	N4, N5
PEK_K01	K2_ZARZ_K05 K2_ZARZ_K08	C1, C2, C3	Lec1-Lec15, lab1-Lab7	N1-N5

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

*** - from table above